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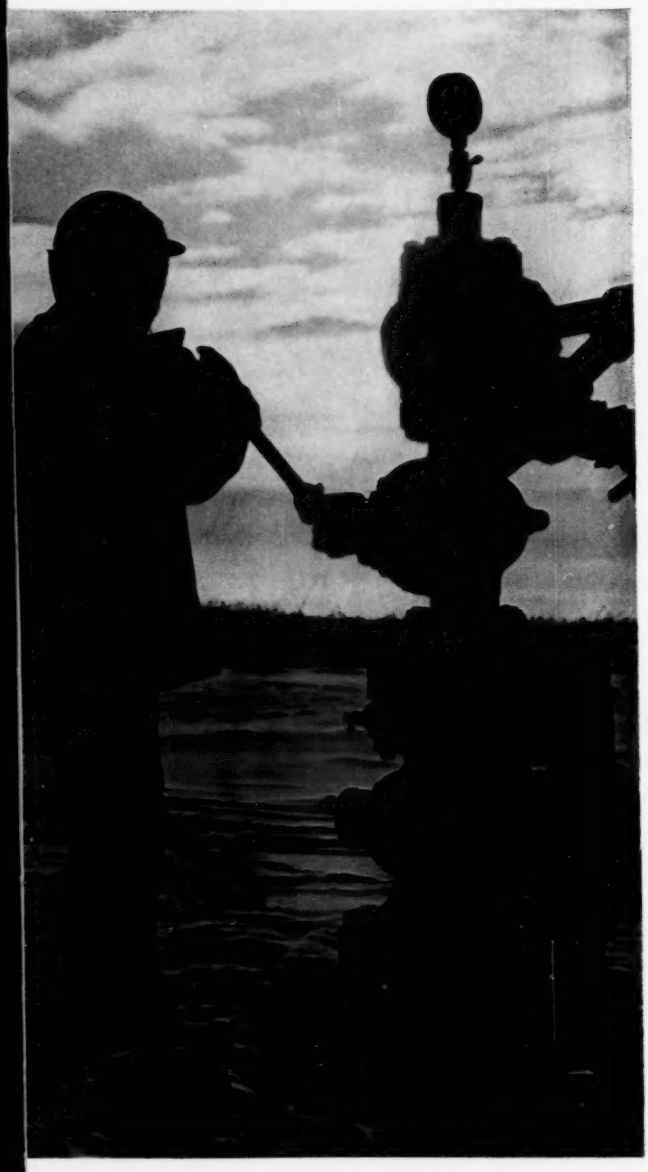
Chemical Week



Frenetic pharmaceuticals. Mergers, stock splits highlight busy drug scene . . . . p. 21

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November 29, 1958

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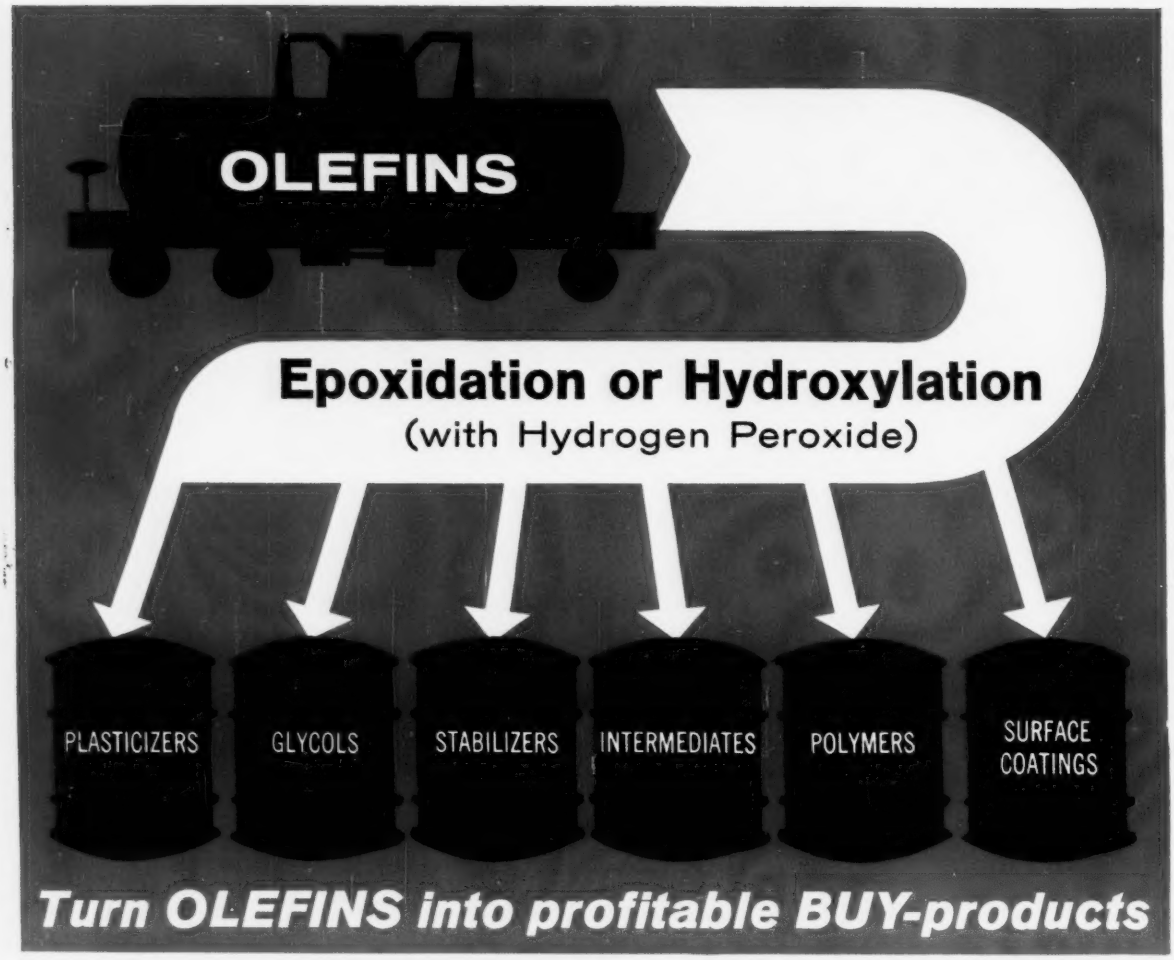

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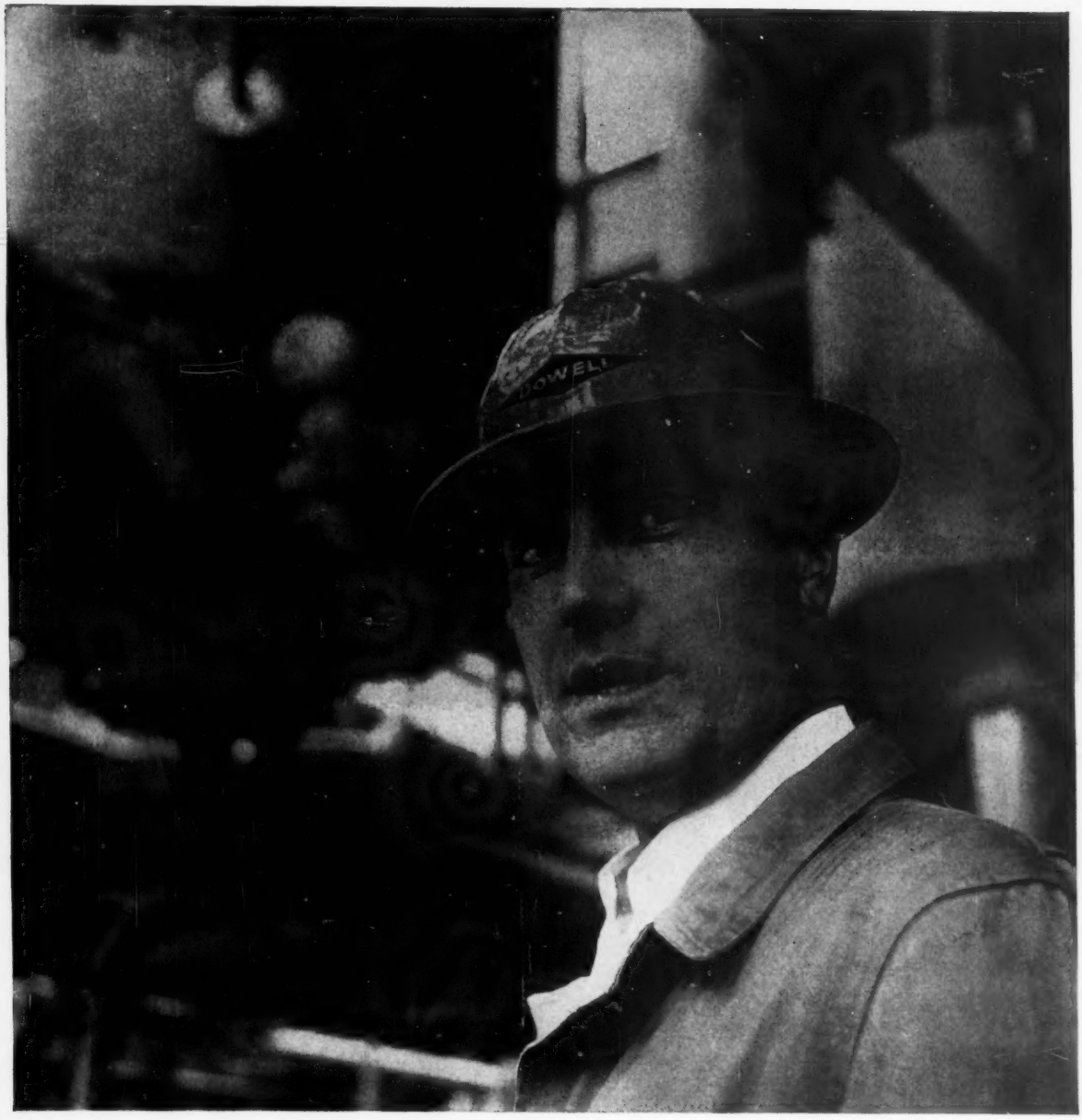

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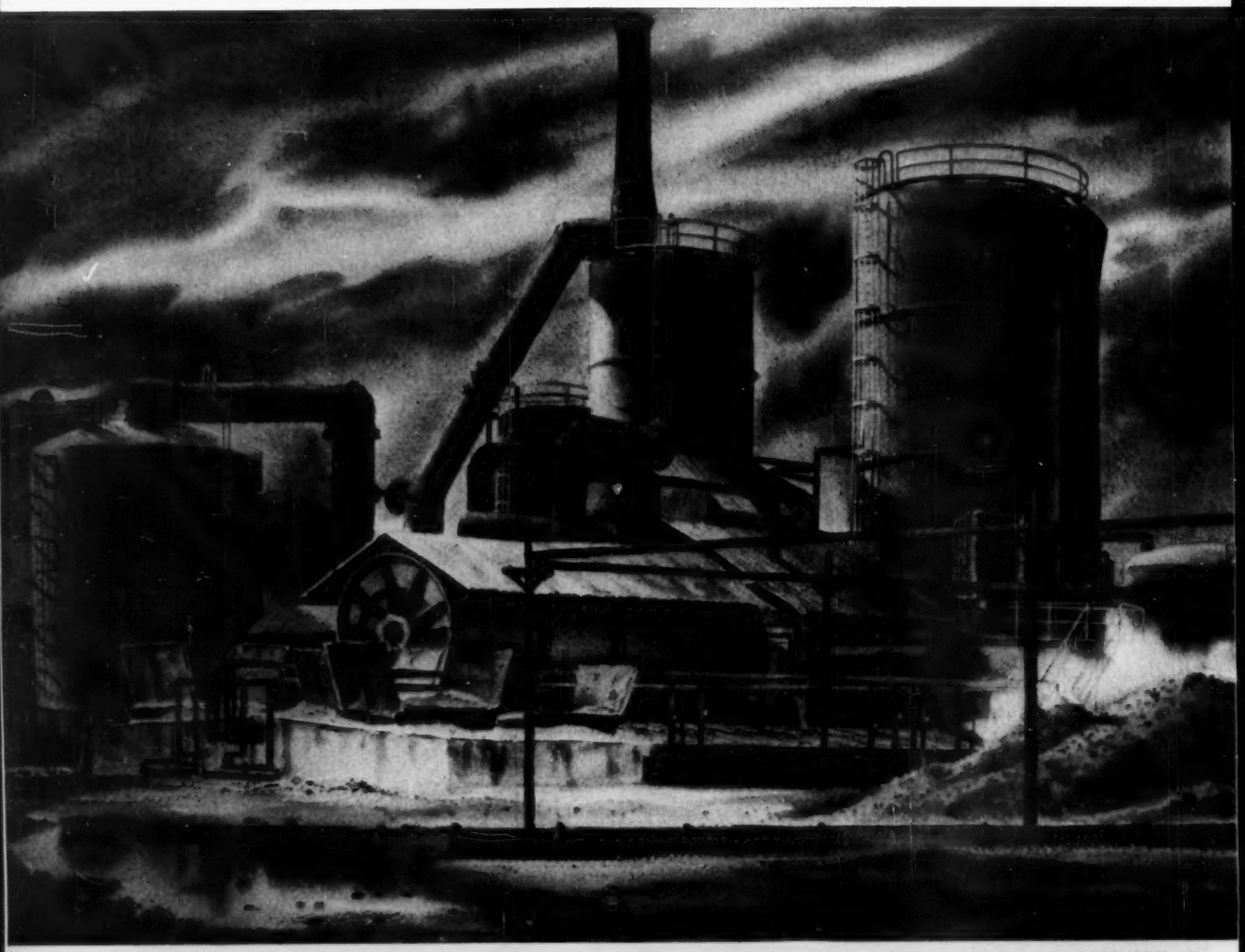

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Chemical Week

TOP OF THE WEEK **NOVEMBER 29, 1958**

- **There's a real fight brewing over polypropylene patents.** Montecatini claims it has the basic position—and plans to defend it ..... **p. 22**
- **Customers tell their needs at supplier's seminar;** vendor finds whole staff benefits from better backgrounding in the buyers' businesses ..... **p. 40**
- **Choosing the right host for your "hospitality suite"** is vital in making such suites useful sales tools ..... **p. 73**

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22 Polypropylene patent situation: Montecatini's hint that non-German producers need license elicits resistance from companies concerned.

23 Whose move next in air pollution abatement? Government-industry conference proposes step-by-step action.

24 General Aniline dispute again holds spotlight. Farben demands recognition as interested party.

27 WASHINGTON LETTER

33 RESEARCH
Polish maker S. C. Johnson shows off versatile new chemical intermediate. Sales potential: 50 million lbs./year.

34 Competition coming for chemical propellents? Here's what rocket makers may look to next.

40 ADMINISTRATION
S. B. Penick gives employees greater awareness of company operations by inviting customers to tell their story.

44 Setting nuclear pollution standards —Michigan group readies for pollution control well before power plant begins operation.

46 Supreme Court upholds state sovereignty in regulating natural gas transportation rates.

53 ENGINEERING
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54 Engineering design data and a protective coating for cooling towers are now offered by Fluor.

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COVER COURTESY OF UNION CARBIDE CORP.

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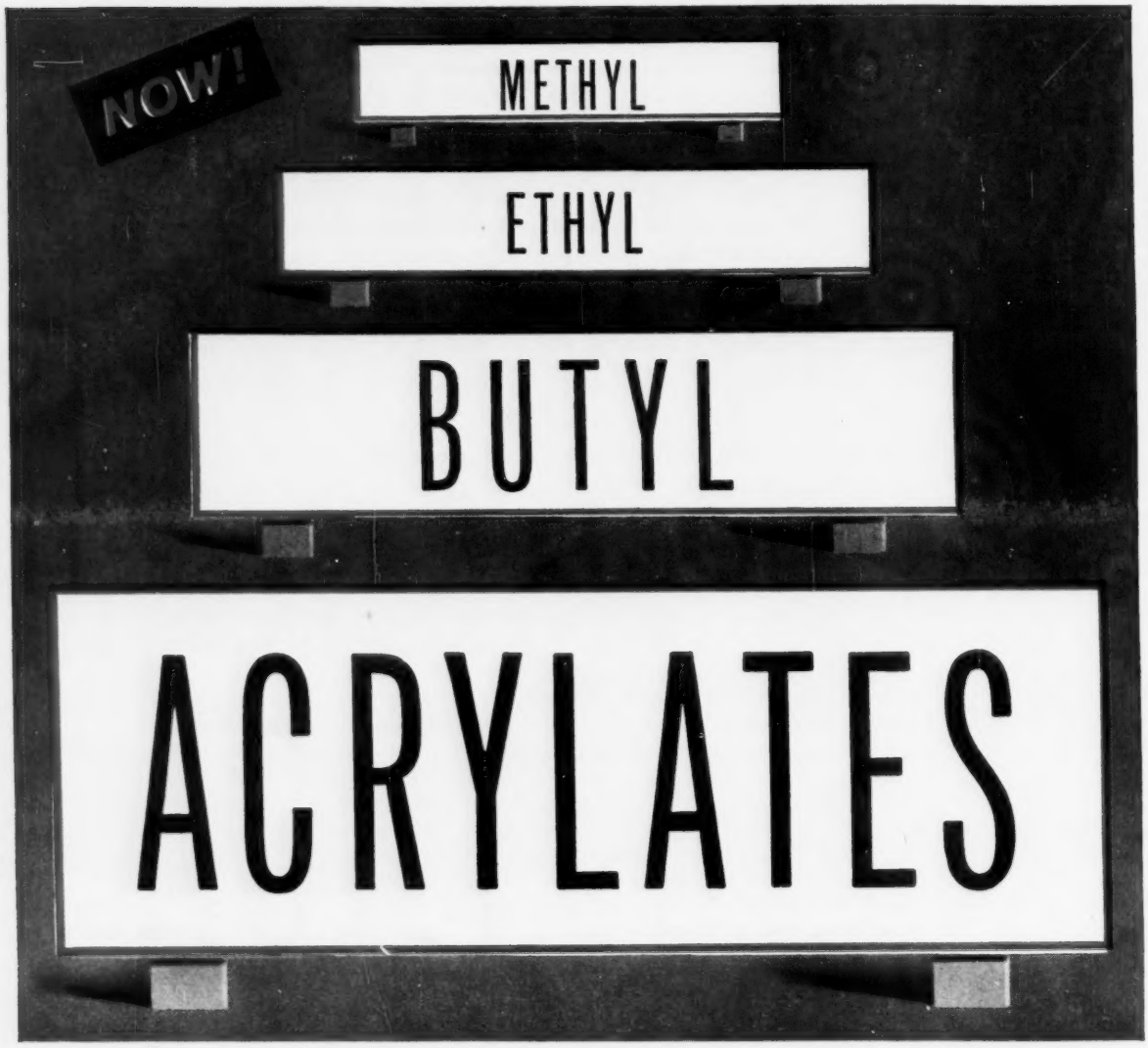
CELANESE—growing in Monomers



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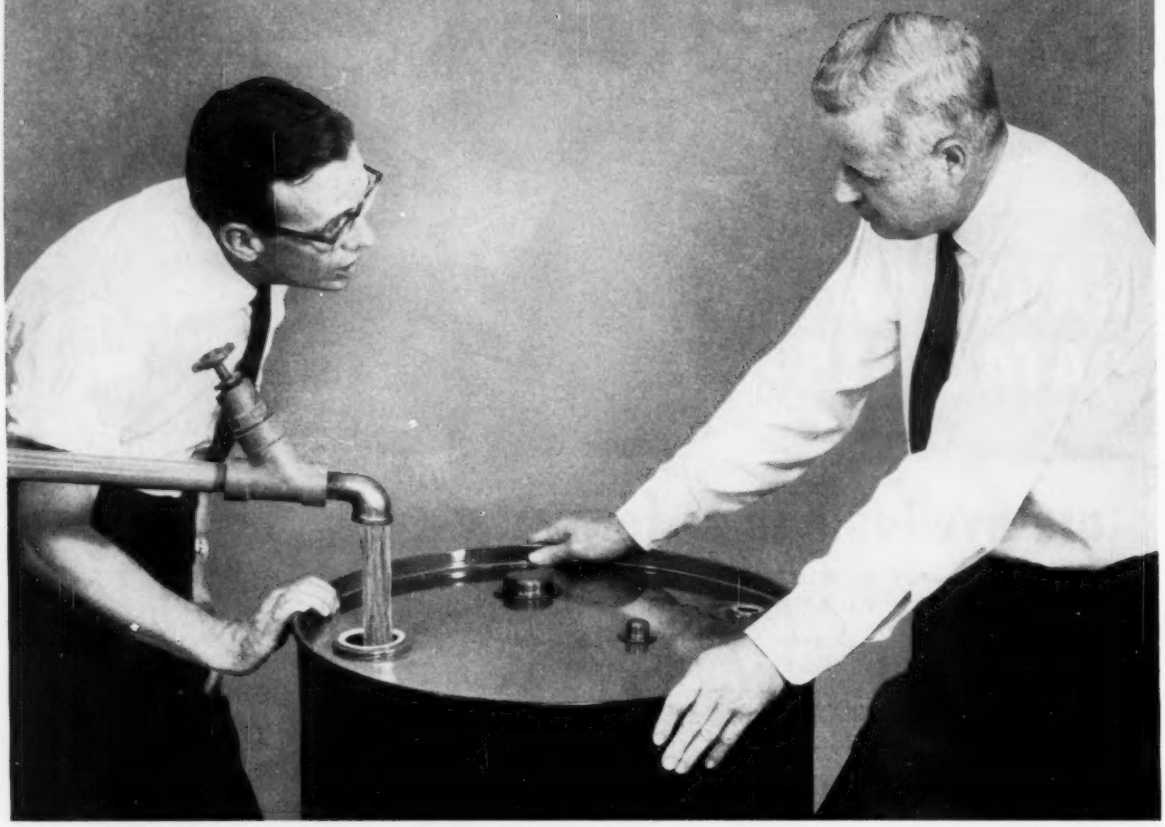

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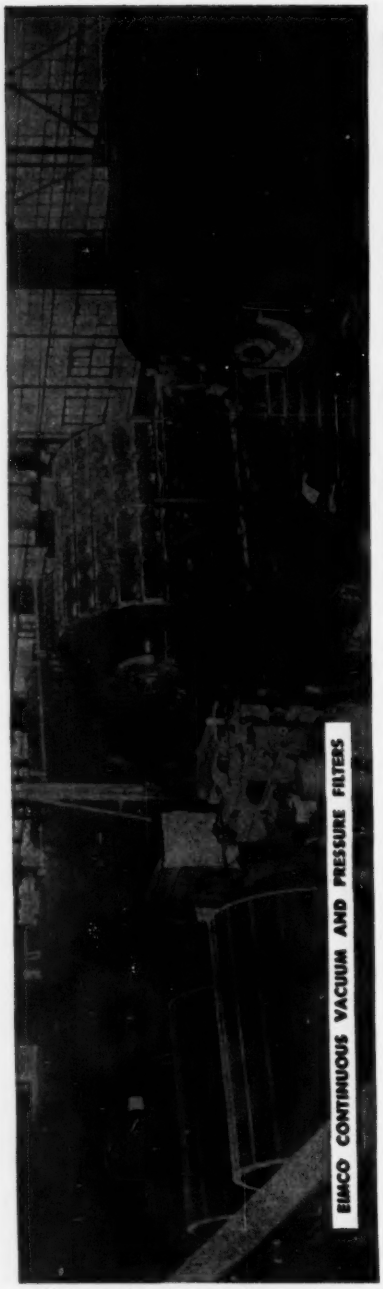

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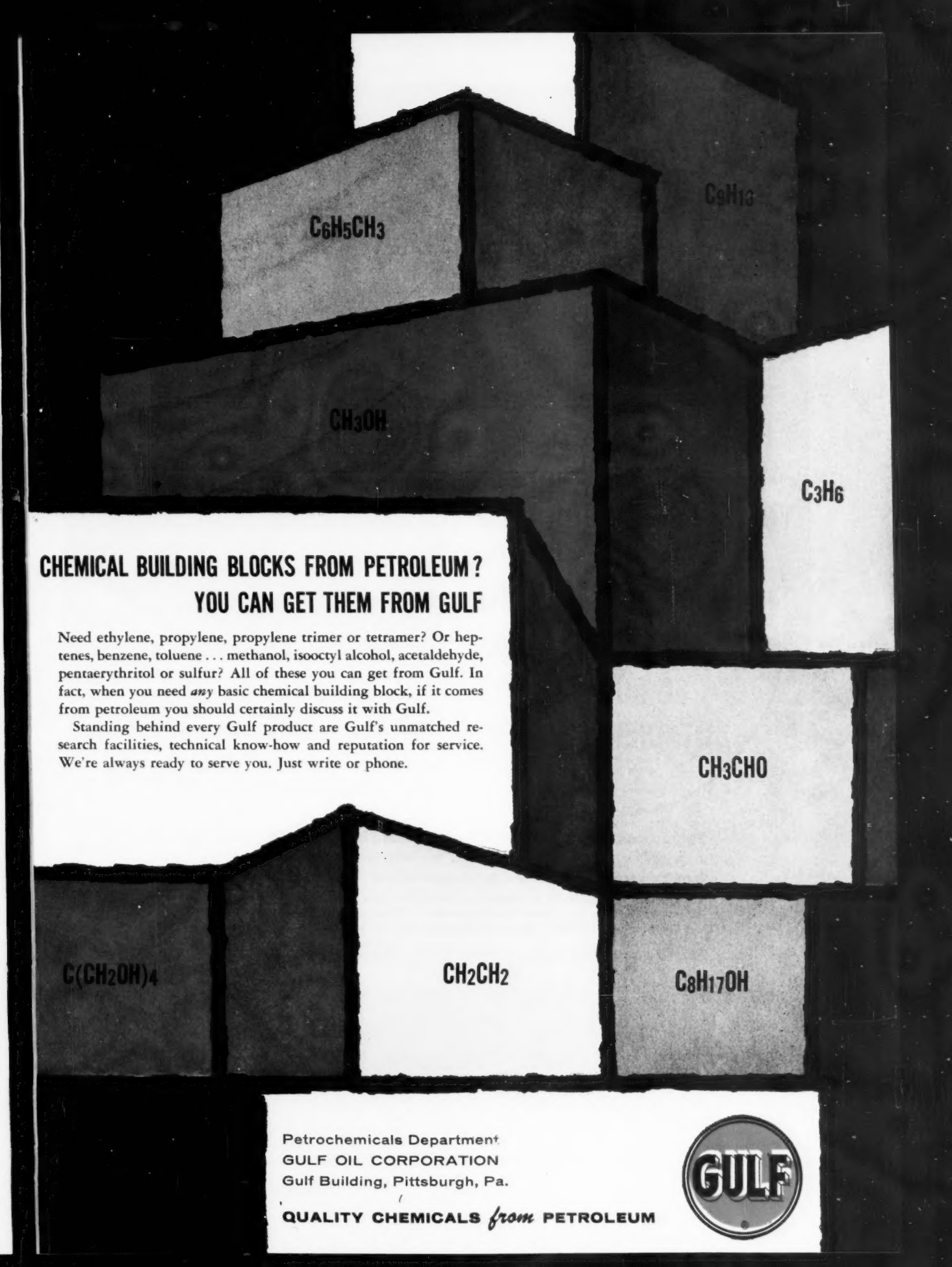

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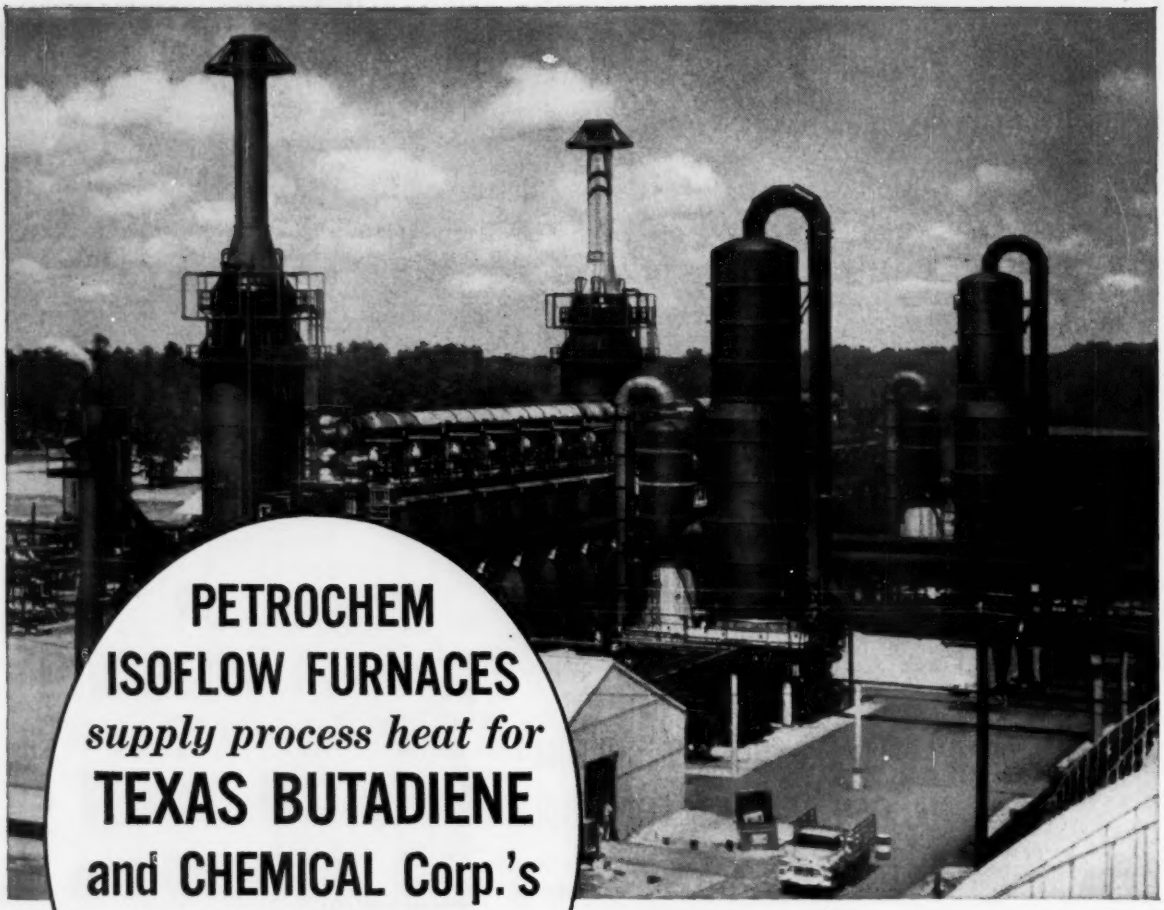

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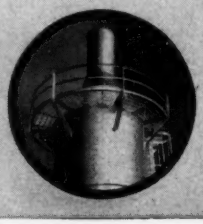

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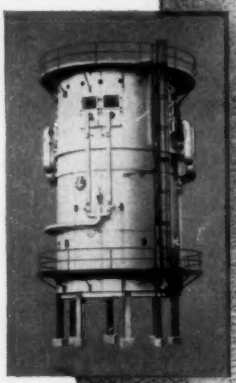

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A dip that keeps paintbrushes soft and usable indefinitely (and might also improve waterless hand cleaners).

DYTROL

CREATING A BRAND NEW MARKET IN PAINT SPECIALTIES

Perhaps it was the trio of properties: nonflammable, nontoxic, and nonvolatile that simultaneously triggered a sudden vigorous interest by a paint company and a specialty maker in a Monsanto product named Dytrol. These properties, coupled with an amazing affinity for solvating resins, have sparked what may develop into a new, large-volume item: a paintbrush dip that keeps brushes usable for up to a year without complicated, tiresome cleaning.

With the fall do-it-yourself painting season going full tilt, paintbrush sales are humping into another periodic upswing. An estimated 65-70% of these brushes will end up stiff, hard and unusable on the handy man's shelves, with most of their service life wasted because of improper cleaning. This innate laziness of amateur painters and this disregard of proper brush care are of deep concern to brushmakers and paint makers alike.

Amateurs tend to buy cheap brushes —on which there is less profit. And they often put off painting because each job requires new brushes. A new "preserver-softener" based on Dytrol may be the answer.

Oddly enough, the compound that may become the best specialty item yet for paintbrush care is not a good paint remover. Its solvating action on dried films is too slow. For brush care or for personal clean-up after painting, however, the pleasant-smelling liquid is outstanding.

What's most intriguing is the way it works: you can squeeze or wipe a brush dry of the excess of any oil-base paint, stand it in Dytrol for a little while, wrap it in paper and put it on the shelf. As long as a year later, the brush is still soft, pliable, ready to use.

The nontoxic compound simply plasticizes the paint to such an extent that it never hardens. And the liquid is so nonvolatile that it does not evaporate away to leave film-forming resin behind! When the brush is taken down for re-use, the plasticizer goes right into the new paint. Because Dytrol does not evaporate, brushes can even be left soaking from use to use, with no loss of liquid.

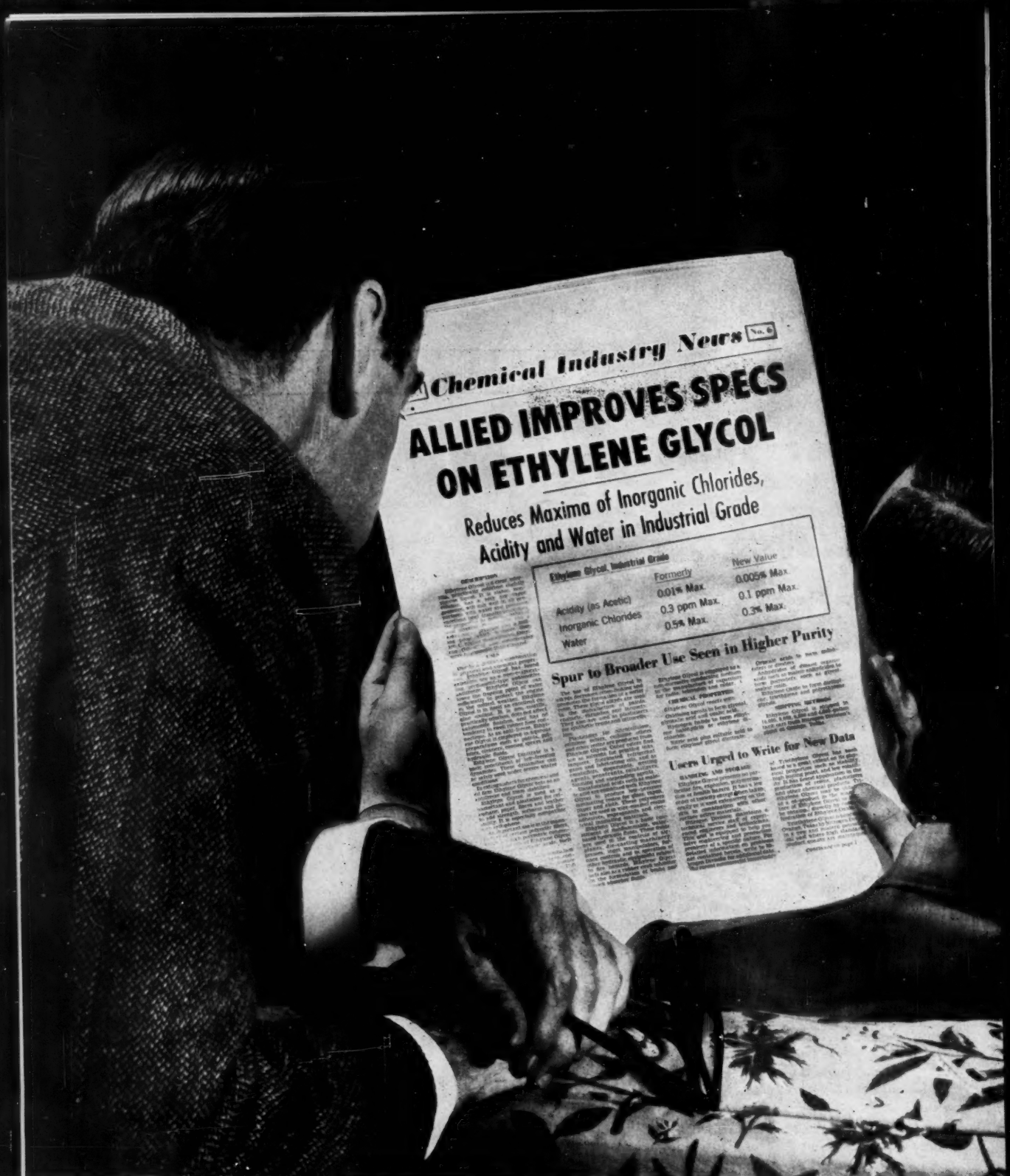
This "stay-put" characteristic can be valuable in restoring the pliability of stiffened brushes. The new brush "preserver-softener" is expected to have a lot of appeal for professional painters, too: by eliminating the tedious end-of-the-day cleaning with flammable, skin-irritating solvents.

In fact, this nontoxic liquid has an almost cosmetic effect on the hands. For that reason, it should attract the interest of makers of waterless hand cleaners. For cleaning paint off the skin, Dytrol is outstanding.

Dytrol has a highly pleasing odor, leaves the skin soft and smooth, and does not extract the natural skin oils as do ordinary paint solvents. It is so nonvolatile that it shows an absolute vapor pressure of only 1.1 mm Hg. at 160° C. As a result, makers of hand cleaners will hardly overlook its possibilities as a partial replacement for odorless kerosene in the hand cleaners used around paint shops.

Dytrol: Monsanto Trademark

For further information on Dytrol for use in paintbrush softening, request a copy of Specialty Data Report CS-10. Write today to Organic Chemicals Division, Monsanto Chemical Company, St. Louis 24, Missouri.



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Business
Newsletter

CHEMICAL WEEK
November 29, 1958

The trend lines are still pointing up for the CPI.

CW's output index *(p. 28)*, at an all-time high this month, rose 1.5 points in the latest week. That brings the index to 196, compared with 188 a year ago.

Chemical stocks are still on the upswing, too. Prices on industrial chemical stocks rose 2.7% in the week ending Nov. 14, according to the Securities & Exchange Commission's index. Pharmaceuticals picked up another 2.7% (*see also p. 21*), and even the lagging nonferrous metals showed a 0.6% rise.

Management confidence in the business outlook is reflected in the latest figures on cash dividend payments. Chemical companies paid out $24.7 million in October, up 5.6% from the Oct. '57 payout. This brings 10-month payments 1.6% above the total of the '57 period. But for nonferrous metals shareholders, dividend payments dipped 25% in October; 27.8% during the first 10 months. For all manufacturers, the October payout was down 1.2% from a year ago; the 10-month total slipped 1.7%.

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But sputtering earnings have caused one company—Virginia-Carolina—to defer its preferred dividend. V-C President Justin Potter told shareholders at last week's company meeting that directors had deferred payment on the 6% cumulative preferred for the first time in 17 years. He explained that in the three months ended Sept. 30, V-C's earnings amounted to only $142,010 while quarterly preferred payments would require $319,580. Arrears on the stock total $73.50/share because of unpaid dividends prior to 1941.

•

Similarly, Jefferson Lake Sulphur Co. reports a net loss of $185,-185 for the nine months ended Sept. 30. President Eugene Walet points out that even though Jefferson Lake Petrochemicals of Canada Ltd. (Peace River, B.C.)—a 69%-owned subsidiary—produced 42,485 tons of sulfur, no shipments were made because rail facilities were still being built. However, the Canadian company's operating costs of $482,000 were charged against the U.S. firm's earnings.

Smith-Douglass, however, has better news to report. It boosted its earnings to $373,972 in the quarter ended Oct. 31, compared with $81,-265 in the same period last year. Sales rose to $7.3 million, up 7%.

And Lithium Corp.'s third quarter actually was the best in its history, with earnings of $237,000 on sales of $2.9 million. Profits were up 70% over the preceding three months, not down, as appeared earlier *(CW, Nov. 15, p. 35)*. Lithium Corp. attributes the earnings spurt to economy moves, notably a 10% saving in production costs.

Fifty-five Upjohn shareholders say they will sell 2.4 million shares of the company through Morgan Stanley & Co., New York underwriters.

In the preliminary prospectus, Upjohn's nine-month sales are pegged at $109.4 million, compared with $92.7 million in the same period last year. Earnings totaled $16.8 million vs. $12.5 million in '57.

During the nine months, antibiotics accounted for 19% of sales; steroids, 24%; nutritional products, 20%; and other pharmacological items, 29%. Fine chemicals and veterinary agricultural products made up the balance. No single product had more than 15% of over-all sales.

The offering will represent about 17% of the company's outstanding shares after Upjohn's forthcoming 25-for-1 stock split (*see p. 21*).

•

U.S. plastic exporters may run into higher British tariffs. A British arbitration tribunal will decide within a week or two whether the tariff on polyvinyl chloride, polyethylene, polystyrene, and polymethyl methacrylate should go from 10% to 33⅓%.

The issue is between the Board of Trade—which says the plastics are not synthetic organic chemicals—and Bakelite Ltd., The Distillers Co., Ltd., ICI, and Monsanto Chemicals Ltd., which claim they are. Synthetic organic chemicals are automatically on the "key industries" list, and come under the higher tariff.

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Diversification is the theme of two new moves toward acquisition.

Revlon Inc. has gained working control—242,000 shares—of Schick, Inc. (Lancaster, Pa.), electric shaver producer.

And B. T. Babbitt, producer of household cleaners, is talking merger with Charles Antell (Baltimore), a cosmetic company.

•

Pittsburgh Plate Glass plans overseas production of chemicals, paints and glass. In the first step toward that goal, it has set up an international subsidiary, Pittsburgh Plate Glass International, S. A., incorporated as a Swiss firm, with headquarters in Geneva and a branch office in Havana. The subsidiary will integrate all phases of Pittsburgh's overseas business, including licensing, investment, marketing and—eventually—manufacturing.

•

Du Pont is reactivating extrusion equipment at its Yerkes plant in Tonawanda, N. Y., to evaluate large-scale output of polyethylene film. The equipment should be operating by mid-December. A Du Pont spokesman told *CW* that, if it decides to make the film on a commercial scale, operations would be moved from Tonawanda to one of its film division plants.

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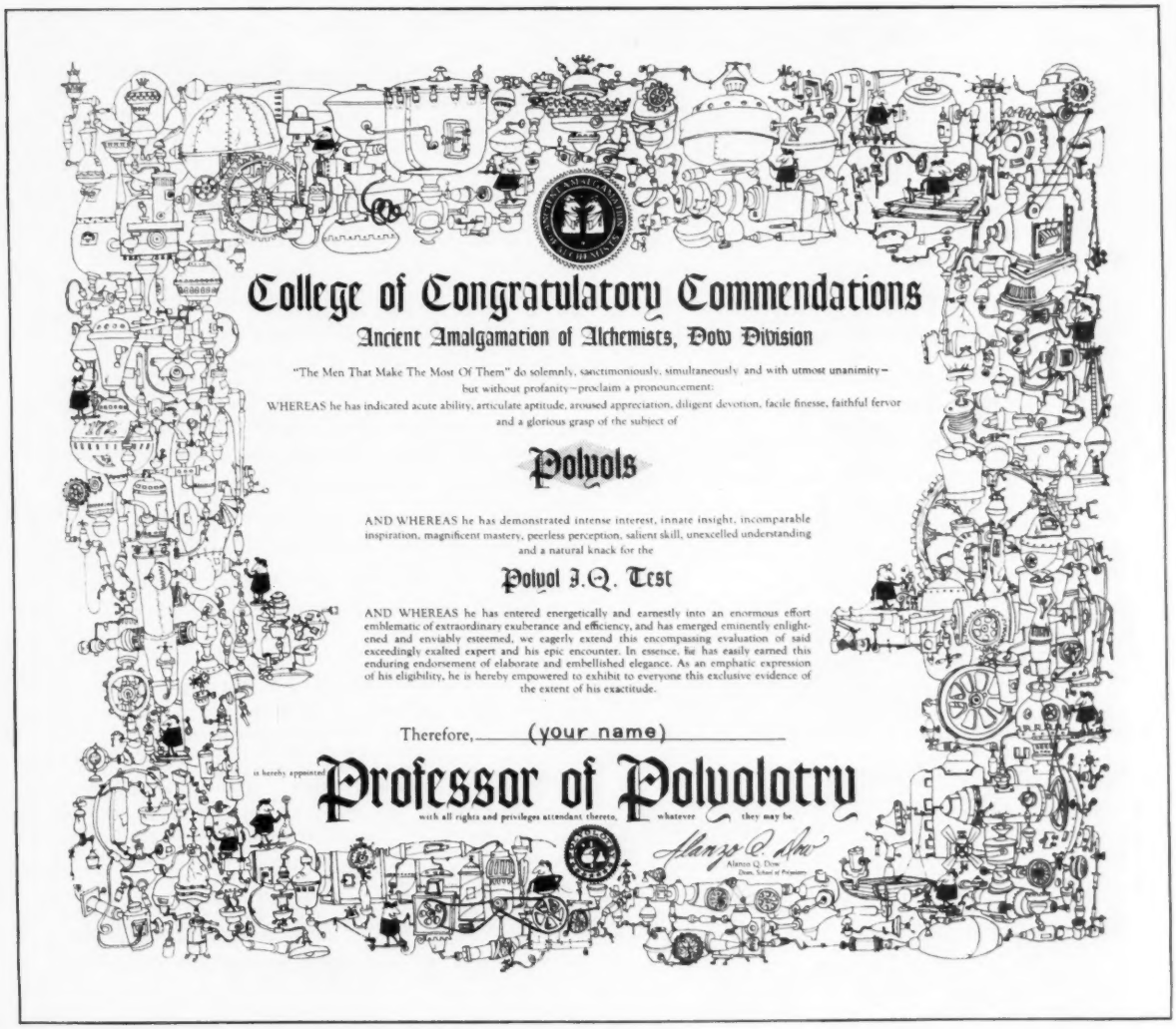
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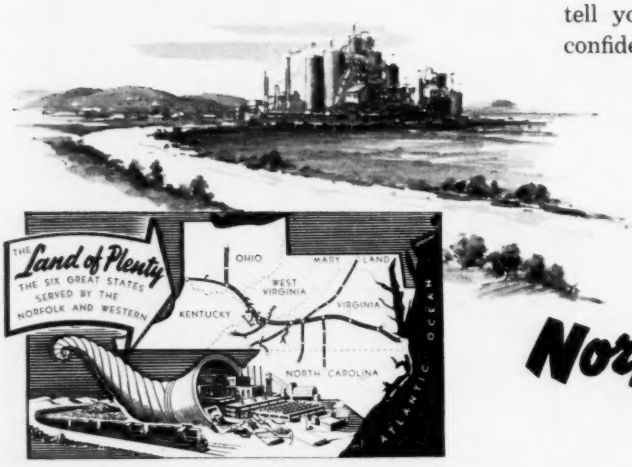

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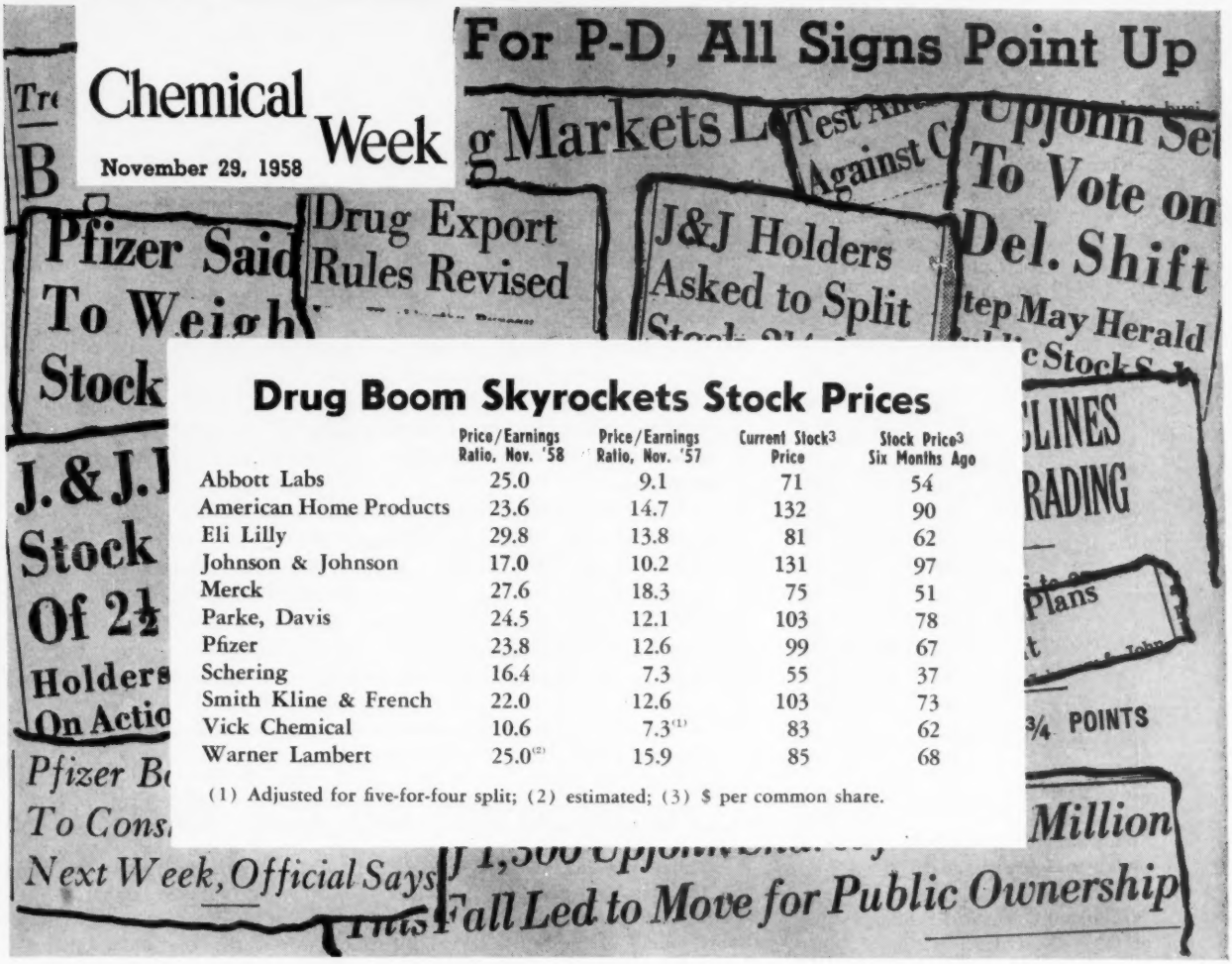
Chemical Week
November 29, 1958
For P-D, All Signs Point Up
Pfizer Said To Weigh Stock
Drug Export Rules Revised
J&J Holders Asked to Split
To Vote on Del. Shift
Drug Boom Skyrockets Stock Prices
Price/Earnings Ratio, Nov. '58
Price/Earnings Ratio, Nov. '57
Current Stock[3] Price
Stock Price[3] Six Months Ago
Abbott Labs 25.0 9.1 71 54
American Home Products 23.6 14.7 132 90
Eli Lilly 29.8 13.8 81 62
Johnson & Johnson 17.0 10.2 131 97
Merck 27.6 18.3 75 51
Parke, Davis 24.5 12.1 103 78
Pfizer 23.8 12.6 99 67
Schering 16.4 7.3 55 37
Smith Kline & French 22.0 12.6 103 73
Vick Chemical 10.6 7.3[1] 83 62
Warner Lambert 25.0[2] 15.9 85 68
(1) Adjusted for five-for-four split; (2) estimated; (3) $ per common share.
Next Week, Official Says
Fall Led to Move for Public Ownership

Soaring Prospects Spur Drug Stock Splits

Drugmakers—standouts all through the recession—this week are wooing shareholders with new stock splits, tangible results of stellar earnings.

And there's evidence now, with prospects for '59 as good as ever, that other companies will decide to dole out extra shares within the next few months, authorize still more for acquisitions, diversification and expansion. Result: new power for a continued sales boom that could attract new investors despite top-heavy price/-earnings ratios (*table, above*).

Newest developments are the 2½-for-1 stock splits proposed for Pfizer and Johnson & Johnson, both approved by directors last week. These follow hard on the heels of Parke, Davis' 2-for-1 stock cleavage and Upjohn's plan to exchange shares on a 25-for-1 basis when it reincorporates in Delaware (*CW, Nov. 8, p. 25*).

For Popular Prices: The companies are pretty much in agreement on why they voted the new share distributions. All want to get prices down into the more "popular" trading range ($30-50/share), to make the stock easier to buy. Moreover, the greater abundance of shares better stabilizes the stocks' prices.

But there are other reasons, too. One of them is to ease acquisition of new property.

In most cases, more shares are being authorized than will actually be issued. Johnson & Johnson—which will have an extra 675,000 shares after its split—strongly hints that acquisitions are just what it has in mind. Speculation is that these additions will be in the ethical field. Though J & J has been operating an ethical division for several years, that division hasn't yet accounted for a major portion of sales. A new move in this direction might add substantial profits to the company's '59 earnings.

Pfizer directors, endorsing the 2½-for-1 split late last week, have not yet decided how many new shares the company will authorize. Observers say, however, that there will be some surplus held in reserve for possible purchases by the firm or for other general corporate purposes.

And the Parke, Davis split, which became official last week after overwhelming stockholder approval, will allow a surplus of 5 million new shares already earmarked for new acquisitions and expansion.

Dividends Going Up: New stock issues aren't the only evidence of burgeoning earnings. Pfizer last week voted to hoist its quarterly dividend payment from 40¢ to 50¢/share, representing the eighth consecutive year that the company has raised its dividend. Total '58 payout will be $2.25/share—it was $2.10/share last year.

Upjohn, until now a privately held company, said last month that it will offer some shares to the public. And, at the same time, its stockholders voted a 25-for-1 split to take effect

when the company becomes Delaware-based.

Pinning Down Tax Base: Reason for its decision to go public with the resulting stock split (present value is about $1,700/share) wasn't revealed. But *CW* learned that one reason behind the move is to clarify inheritance taxes—if the stock has never been traded over-the-counter, the government can put an arbitrary, sometimes optimistic, value on it.

After the split, the company will probably apply for listing on the "big board," although only a small part of the stock will be sold.

First Merge, Then Split: But these companies are definitely not the only drug firms with stock-splitting plans. Most imminent split candidate is Warner-Lambert.

According to insiders, this split would take place after the still-pending merger with R. J. Reynolds Tobacco Co. (*CW, Oct. 11, p. 29*). The new company would split its stock 4-for-1, pay a dividend of $1/share. Wall Streeters reason that since Reynolds recently raised its dividend to $4, original 4-for-1 stock split plans are intact. Other split candidates mentioned: American Home Products, Smith Kline & French.

With such bullish news in the industry, it's natural for companies to launch new expansions and acquisitions. But not all will be in the related drug fields; some are moving into industrial chemicals.

Silicon to Citric: A veteran industry observer holds that Merck's production of high-purity silicon, Eli Lilly's new Elicide-75 (a bacterial inhibitor to prolong life of oil emulsions) and Pfizer's various ventures into agricultural chemicals and oil additives are touching off a "broaden-your-base" policy. Another instance: Miles Laboratories' forthcoming $6-million debenture offer, more than half for major citric acid expansion.

But diversification won't mean any de-emphasis on ethical and proprietary drugs. Pfizer reports large-scale acceptance of its new oral diabetic, Diabinese, and Parke, Davis' Chloromycetin continues to chalk up new sales records. Merck, Schering, Abbott and most others report similar fast-moving new products—all of which puts drug company prospects on a sound basis for growth that may well mean earnings records in '59.

Recommendations on Air Pollution

Government and industry should expand research into the health effects—but guard against hysteria that might result in laws that would cripple industry.

Communities should install balanced air pollution control programs with legal enforcement means. Where local control is not established, states should enforce air pollution controls.

Federal air pollution legislation should be extended indefinitely beyond the 1960 expiration date, with no ceilings placed on appropriations.

Government and industry should set up a permanent liaison unit, holding periodic national meetings.

Government and industry should establish goals with definite responsibilities outlined, including dollar expenditures.

Public agencies should set the example in observing good air pollution control practices; and specific industries should be responsible for solving pollution problems they create.

Crackdown on the Way

A blunt warning was laid squarely on the line last week for chemical process companies: they must spend more money in the future to control air pollution, because tighter government controls are sure to come (see also CW Viewpoint, p. 96).

Chemical industries are not singled out in the issue; the petroleum, automobile and other industries are confronted with the same situation.

That's the gist of what more than 900 delegates to the first national air pollution conference were told during a three-day meeting in Washington (*CW Washington Newsletter, Nov. 22*).

Invited at the behest of Dr. Leroy Burney, Surgeon General of the U.S. Public Health Service, delegates were given a bleak picture of the condition of the nation's air supply today, and the fact that it is rapidly getting worse.

Air pollutants come from many sources: industrial plants, homes, autos, utility plants, etc.

For example, autos and trucks daily dump more than 100 tons of pollutants into Seattle's air. More than 20 tons of contaminants are discharged daily per 100,000 persons where oil heating is used in the home. If coal is used, the figure jumps to more than 100 tons/day.

Estimates of the cost to the nation because of polluted air are in the range of $3-7 billion/year. On top of this come the more intangible harmful effects on health.

Industry has some clear guide lines on how far communities will go to control the matter. Recently, Los Angeles imposed a regulation on industry located within its critical smog area that makes it mandatory to use natural gas instead of fuel oil for industrial combustion during periods of intense smog.

In the advanced planning stage, too, is another Los Angeles zoning regulation that will force some industries—primarily chemical and petroleum—to stay well out of the smog area. Plants already in this area will be frozen in a status quo basis.

Already, vast sums are being spent to combat air pollution. The chemical industry alone is estimated to be spending $200-250 million/year on control or avoidance of air pollution—not counting extra millions for research.

But there seems no doubt that more money and effort must be expended in the future on this problem.

The cold, underriding fear of industry is that the public will be panicked into passing control measures that will cripple industry, where less-severe measures might be adequate.

Putting New Pieces in the Polyolefin Puzzle

Natta claims the 'basic discovery.'

Who holds the high cards in polypropylene technology? In the U.S., the answer may be patent-delayed for several years; but in Europe, at least a tentative answer seems to be shaping up this week.

As a result of last week's statement from Montecatini (*CW Business Newsletter, Nov. 22*), representatives of Germany's Karl Ziegler and Italy's Montecatini—the big names in polyolefin processes and catalysts—planned to clarify the situation with a joint declaration. Montecatini has rights to the discoveries of Prof. Giulio Natta.

The need for such clarification is becoming increasingly pressing as more companies move toward polypropylene production. Aside from reducing confusion for manufacturers, it's to the advantage of whoever has the basic know-how to avoid costly future litigation by persuading prospective producers to license now.

Selling Samples in England: One concern that may soon be ready to start commercial polypropylene production in Europe is Shell Chemical (London). It has started marketing limited quantities of the plastic—tradenamed Carlona — for evaluation in injection molding.

Acknowledging the existence of "patent problems," Shell declines to say anything about the process it's using or where it's making the resin.

And a $6-million, 5,000-tons/year polypropylene unit is being built for Danubia Petrochemie AG. in Austria.

In the U.S., producer Hercules Powder and prospective producers Humble-Standard Oil (Jersey) and Eastman all insist they have developed their own processes. Hercules and

CW PHOTO—ALFRED WAGG

Ziegler claims the 'key catalysts.'

Esso are licensed to use Ziegler-type catalysts; Eastman says it has developed a catalyst system of its own.

The present European producers are Montecatini in Italy, Farbwerke Hoechst and Hibernia in Germany. Relationships among the various European and U.S. concerns are expected to be made clear in the forthcoming Montecatini-Ziegler joint declaration.

New Top Team Looks to Future

To give two senior officers more time to concentrate on long-range programs, Union Carbide is creating a new office—chairman of the board—and making some top-level shifts.

After six years as president, Chicago-born Morse Dial, 63, becomes chairman of the board. He'll continue as chief executive officer.

New president is Howard Bunn, 59-year-old chemical engineer, who has been an executive vice-president the past three years.

Kenneth Hannan, 47, continues as executive vice-president, and Birny Mason, Jr., 49, advances from vice-president to executive vice-president. Mason and 48-year-old Vice-President Kenneth Rush will become board members.

CW PHOTO—FRANK AMELIA

For Carbide's Bunn (left) and Dial, more stress on the long term.

GAF Tangle Tops Law Tiffs

The many-splendored dispute over General Aniline & Film Corp.—one aspect of which will be up for hearing next month—again holds top interest among CPI court cases this week.

There are, aside from the GAF hearing, these other legal matters in the news: In Chicago, District Judge Walter LaBuy has set Feb. 16 for final hearings in the U.S. government's antitrust suit against Du Pont and General Motors; in Montreal, the Canadian government has won its price-fixing case against 14 pulp and paper producers, who were assessed fines ranging from $1,000 to $10,000; and in Milwaukee and Toledo, city and county officials were asking counsel to look into identical bids from various salt companies for supplying salt for local roads and streets.

But most attention this week will be on the GAF case, in which the U.S. district court at Washington is expected to receive answers to the startling petition from Germany's Walter Schmidt and Ferdinand Kremer, trustees for I.G. Farben In Liquidation (*CW Business Newsletter, Nov. 22*).

90% Stake Indicated: Closer analysis of the 48 pages of legal documents filed for the Farben trustees last fortnight reveals that they are not claiming outright ownership of the GAF stock and funds that were seized by the U.S. government during World War II. What they do claim is a "beneficial interest" that—according to the formula they propose—apparently would now amount to about 90% of the vested property's present market value, which they estimate to be about $100 million.

Further, the Farben petition does not oppose the U.S. Justice Dept.'s plan to put the GAF stock up for sale to private U.S. investors. It does ask that any proceeds from such sale not be paid out until the Farben claim has been adjudicated. In fact, the petition tends to encourage the move to sell the stock, because it asserts that GAF was "tainted" with enemy ownership up to 1942 and hence properly subject to vesting.

Schmidt and Kremer admit that Farben stockholders aren't eligible now to receive any proceeds from sales of GAF stock. They're pinning hope on a recurrent proposal—sure to be introduced anew in the recently elected 86th Congress—that would drastically amend the Trading With the Enemy Act, thereby making German and Japanese citizens eligible to file claims for vested assets.

Meanwhile, Wall Street seethes with rumors about which investment houses and syndicates will bid on the vested GAF stock, when and if some kind of settlement permits the Justice Dept. to put the property on the block. Though GAF's book value is only about $120 million, it's reported that at least one concern is considering a bid of more than $150 million.

Tax Break in Alaska

Beckoning eagerly to industry, Alaska's Territorial Board of Administration last week handed out its second door prize—an estimated $2-million tax concession under the 1957 Industrial Tax Incentive Act.

Alaska Lumber and Pulp Co. won the prize for its $55-million, 300-ton/-day pulp mill, abuilding at Silver Bay (near Sitka). Last year, Pacific Northern Lumber Co. (Portland) received the first Alaskan concession.

The relief becomes effective when production runs at capacity for 60 days, or until output totals 25,000 tons. Then, for 10 years, the company will be free of the state income tax, any state sales or property taxes, and other licenses and fees. But it will have to pay some $7,000/year in liquid fuel taxes. The relief ends automatically if the company's net annual income exceeds 8% of its capital investment, or $4 million.

Earlier, the company had reached an agreement with the city of Sitka and the local school district, setting a $72,000/year ceiling on property taxes.

The concessions may entice Japanese as well as U.S. investors to Alaska. The Alaska Lumber mill is partly financed by a group of Japanese rayon producers. They put up $36 million, will get the mill's pulp output. U. S. interests supplied another $19 million.

Coking coal mining may be the next Japanese-U. S. venture. If mining in western Alaska proves feasible, it could halve the U.S.-to-Japan coal shipping distance, since coal now goes to Japan all the way from the east coast of the U. S.

Cardox for Chemetron

Chemetron Corp. will soon have a new division and a bigger business in "consumable and less-cyclical" products. The broad-based chemical and equipment maker is negotiating for most of the assets of Cardox Corp.'s (Chicago) carbon dioxide, chlorine dioxide and fire equipment divisions. Moreover, the move will extend Chemetron's carbon dioxide marketing into 14 additional states.

In exchange for 165,000 shares of Chemetron common stock (now selling for about $33.40/share) and $2 million in cash, Chemetron gets Cardox's interests in the Dean-Cardox, Witt Ice and General Carbonic subsidiaries. Cardox, a subsidiary of Marmon-Herrington Co., will retain its other assets.

Cardox has six carbon dioxide plants—at Monee, Ill.; St. Louis, Mo.; Cabin Creek, W. Va.; Muscatine, Ia.; Ventura, Calif.; and Memphis, Tenn. It produces chlorine dioxide for flour bleaching at Claremont, Okla. These plants will be operated as the Cardox Division, headed by Roy T. Omundson, now president of Cardox Corp.

More Minerals Coming

More barter deals—in which certain metals and minerals will come into the U.S. in exchange for surplus agricultural commodities—are now in prospect.

The White House, under pressure to help Latin American and Asian countries that are largely dependent on their metal and mineral exports, issued a new shopping list of foreign strategic materials. At the same time, the Agriculture Dept. put out new rules for barter transactions.

The new shopping list includes certain abrasives, antimony, asbestos, bauxite, beryl, bismuth, cadmium, chromite, columbite, cryolite, diamonds, ferrochrome, fluorspar, lead, manganese, mercury, mica, nickel, palladium, quartz crystals, ruthenium, selenium, silicon carbide, tantalite, tin and zinc.

EXPANSION

Polyesters: Reichhold Chemicals will reportedly build its first polyester plant in the Pacific Northwest at its Tacoma, Wash., layout. Work is expected to start within a month and be completed within six months. Most of the output will go to the boat industry. Reichhold acknowledges expansion plans at Tacoma but says it's "too early" to say more.

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Adhesives, Textile Chemicals: Polymer Industries (Philip Morris subsidiary) plans a $360,000 expansion of its Springdale, Conn., plant, to double present manufacturing, lab and office facilities. Work will start early in '59, will add 12,000 sq.ft. to the manufacturing area.

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Fats, Oils: Woburn Chemical Corp. (Harrison, N.J.) will install a 180,000-cu.ft./day hydrogen plant in March. It already has increased its capacity for hydrogenated fats and oils about 10-fold, to some 1.5 million lbs./month.

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Paper By-products: Puget Sound Pulp & Timber Co. (Bellingham, Wash.) will spend $400,000 expanding its mill by-products production. First step: doubling output of concentrated lignin from its industrial alcohol plant. The plant converts wood sugars from sulfite liquor into 190-proof ethyl alcohol. Part of the lignin concentrate goes to Monsanto's vanillin plant.

COMPANIES

Freeport Sulphur Co. has changed the name of its subsidiary, Cuban American Nickel Co. Its new name: Freeport Nickel Co. It will operate the Port Nickel (La.) nickel and cobalt refinery. Operations start next summer, at the rate of 50 million lbs./year of nickel and 4.4 million lbs./year of cobalt.

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United Ultramarine & Chemical Co. (New York) has been set up by Vereinigte Ultramarin Fabriken A. G. (Cologne, Germany) to market its ultramarine blue pigments and allied chemicals. The new subsidiary will also "maintain contact" with U.S. firms to develop licensing agreements for making specialty chemicals in Germany. American Cyanamid has discontinued distributing Vereinigte's ultramarine blue.

•

Dixon Chemical Industries (Bloomfield, N.J.) has arranged financing for its planned sulfuric acid plant at Paulsboro, N.J. It has filed for registration of $5.9 million of 6% subordinated debentures (due Dec. 1, '78) and 236,000 shares of $1-par common stock.

Prudential Insurance Co. of America has agreed to buy $3.5 million in 6% secured notes by Jan. '60, and will get a warrant to buy 41,491 shares of common stock at $1/share by Dec. '74.

And Dixon will be able to borrow up to $1 million from the Manufacturers Trust Co. Dixon must deposit with the bank $2.8 million from the sale of stock and debentures, and enough cash from the secured and banknote issues to bring the total deposit up to $4.5 million. This can be withdrawn for the Paulsboro project, pursuant to engineers' certificates. Part of the proceeds will be used to pay off indebtedness.

Dixon already has 150,000 common shares outstanding, held 50-50 by the parent, Dixon Chemical & Research (Newark), and Harriman Ripley & Co., New York investment house. The parent Dixon will hold 25% of Dixon Chemicals' outstanding shares when the new issues are sold.

•

Air Reduction Co. has set up a new department—Special Products Dept.—within its Air Reduction Sales Co. division. The new wing, an expansion of the Machine Welding Dept., will "provide the means for more rapidly bridging the gap between pure research and industrial application." Manager is Charles I. MacGuffie.

FOREIGN

Rubber Chemicals/Germany-U.S.: Naugatuck Chemical Division of U.S. Rubber Co. and Farbenfabriken Bayer have agreed to exchange know-how and patents for chemicals used in producing rubber.

•

Vinyl Chloride/Japan: The Japan Vinyl Chloride Assn. is pushing for a price cartel. The government has authorized cartelization of production and shipment, but so far has rejected the proposal for a price trust. The Japanese producers already have reduced output from 13,000 tons in August to 7,000 tons in October.

•

Polyethylene Yarn/England: Courtaulds Ltd. is doubling capacity for polyethylene yarn at the Coventry plant of its subsidiary, British Celanese. Most of the present output is monofilament. The expansion will increase the proportion of multifilament.

•

Chemicals/Egypt: Egypt has turned to Japan for technical and financial help for the chemical segment of its five-year industrialization plan. A technical mission will soon visit Cairo to provide advice on fertilizer, dyestuff and photographic film projects. Under an agreement signed last summer, Japan will provide $30 million in deferred payment credits at 4¾ % interest.

•

Chemicals/South Africa: African Explosives and Chemical Industries plans a $14-million expansion program, including plants for producing methanol, formaldehyde, and urea-formaldehyde resins and for a doubling of chlorine output. The projects are slated for completion by '60. African Explosives is jointly owned by Imperial Chemical Industries and De Beers Industrial Corp.

• If you are a purchasing agent lining up a source for phosphates, it won't hurt to remember that there have been phosphate shortages in the past. And since phosphate sales have again resumed their long term growth pattern, this is a good time to seek out a supplier that stood by its regular customers during previous phosphate shortages.

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Washington
Newsletter

CHEMICAL WEEK
November 29, 1958

Major implications for chemical industry mergers cropped up in the court decision against the proposed merger of Bethlehem Steel and Youngstown Sheet & Tube Co.

The decision gives judicial sanction to the Justice Dept. and the Federal Trade Commission interpretation of the meaning of the tough 1950 amendments to Section 7 of the Clayton Antimerger Act.

Judge Edward Weinfeld's Youngstown-Bethlehem decision is not binding on any other court, but there is no doubt that other judges will be strongly influenced by his ruling—unless and until the U.S. Supreme Court overturns his decision. An appeal to the Supreme Court this term might produce a decision by June '59. The court could, of course, refuse to hear an appeal. This would leave Judge Weinfeld's decision alone—and would avoid an explicit ruling on the new antimerger law by the Supreme Court itself.

But now, government antitrusters won't hesitate on current cases. As the antitrust lawyers see it, there's no need for uncertainty or doubt—the judge upheld them in sweeping terms. They see their hand strengthened not only in pending cases but also in their dealings with new merger proposals.

These pending cases involving the chemical process industries may be affected—where the facts warrant—by Judge Weinfeld's tough statement of the law:

Crown Zellerbach—FTC has already ruled CZ's acquisition of a West Coast competitor, St. Helens Pulp & Paper Co., violates the law; the case is scheduled for argument next spring in an appeals court.

Scott Paper Co.—a hearing examiner has said this case should be dismissed; a decision is still forthcoming from the full FTC.

Union Carbide Corp.—FTC hearings are still in progress on its acquisition of Visking Corp.

Procter & Gamble—FTC hearings are in progress on its acquisition of Clorox Chemical Co.

Lever Bros. Co.—the Dept. of Justice suit attacking Lever's acquisition of rights to sell "all," Monsanto Chemical Co.'s low-suds detergent, is still in pretrial stage.

Had the decision favored the Bethlehem-Youngstown merger, it would have slowed or stopped government prosecution of pending cases or the filing of new cases until the Supreme Court could rule.

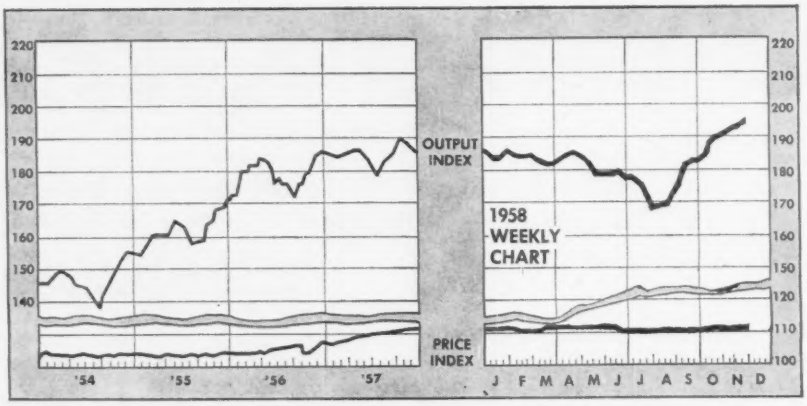
The new Clayton Act provision applying to a proposed merger that's been interpreted for the first time is this: a corporation can't merge

with or acquire another corporation ". . . where in any line of commerce in any section of the country, the effect . . . may be substantially to lessen competition, or tend to create a monopoly." In steel, the Justice Dept. argued a Bethlehem-Youngstown merger would lessen competition and tend to create a monopoly by eliminating Youngstown as an independent competitor in the Middle West.

The companies argued that the merger would stimulate competition by enabling Bethlehem—which has no Midwestern plants—to expand Youngstown facilities. Bethlehem said it planned to spend $358 million to do this if the merger were approved.

The companies also say that any lessening of competition resulting from the merger had to be balanced against certain benefits—creation of new capacity in an area with an existing shortage and increasing the ability of the merged company to give the industry giant, U.S. Steel, more effective competition than either can now do separately.

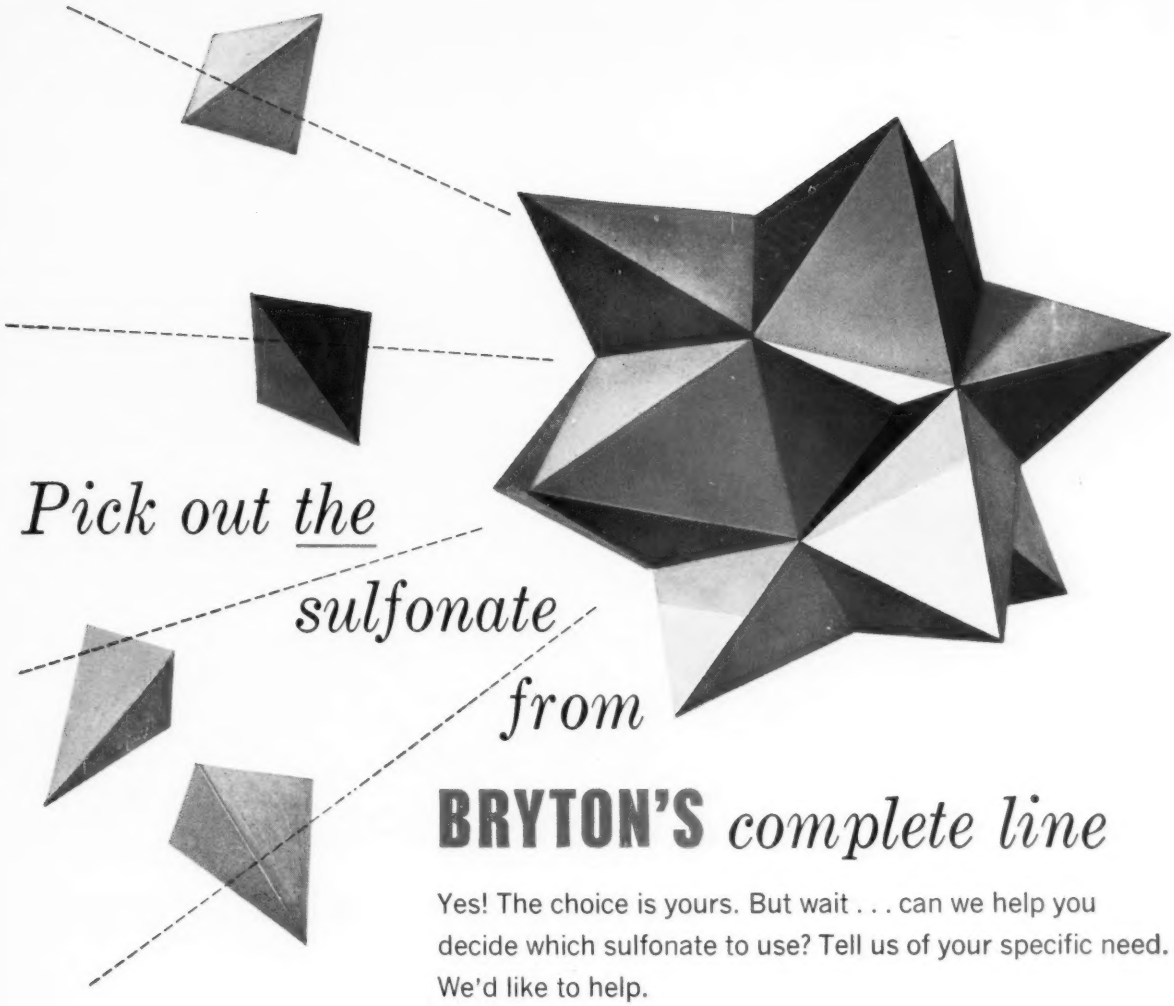
But Weinfeld agreed with the government: "The proposed merger runs afoul of the prohibitions of the Clayton Act in so many directions that to permit it is to render [the act] sterile." Completely rejecting company arguments, Weinfeld ruled: "If the merger offends the statute in any relevant market, then good motives and even demonstrable benefits are irrelevant and afford no defense. [The law] is violated whether or not actual restraints or monopolies or the substantial lessening of competition have occurred or are intended."



Business Indicators

WEEKLY	Latest Week	Preceding Week	Year Ago
Chemical Week output index (1947-49=100)	196.0	194.5	188.0
Chemical Week wholesale price index (1947=100)	111.9	111.4	111.2
Stock price index of 11 chemical companies (Standard & Poor's Corp.)	48.13	47.97	38.83

MONTHLY Wholesale Prices (Index 1947-1949=100)	Latest Month	Preceding Month	Year Ago
All commodities (other than farm and foods)	126.4	126.2	125.8
Chemicals and allied products	110.3	109.9	110.3
Industrial chemicals	123.6	122.7	123.6



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	Bryton Sherosope T	500	62
	Bryton BOSS® 470	460	70
Barium Sulfonates	Bryton Hybase® Barium Sulfonate 65 Base No.	1010	47
	Bryton Barium Sulfonate 30-N 2 Base No.	1010	30
Calcium Sulfonates	Bryton Calcium Sulfonate 30-A	900	30
	Bryton Calcium Sulfonate 45	900	45
Ashless Sulfonates	Ammonium Sulfonate	450	35
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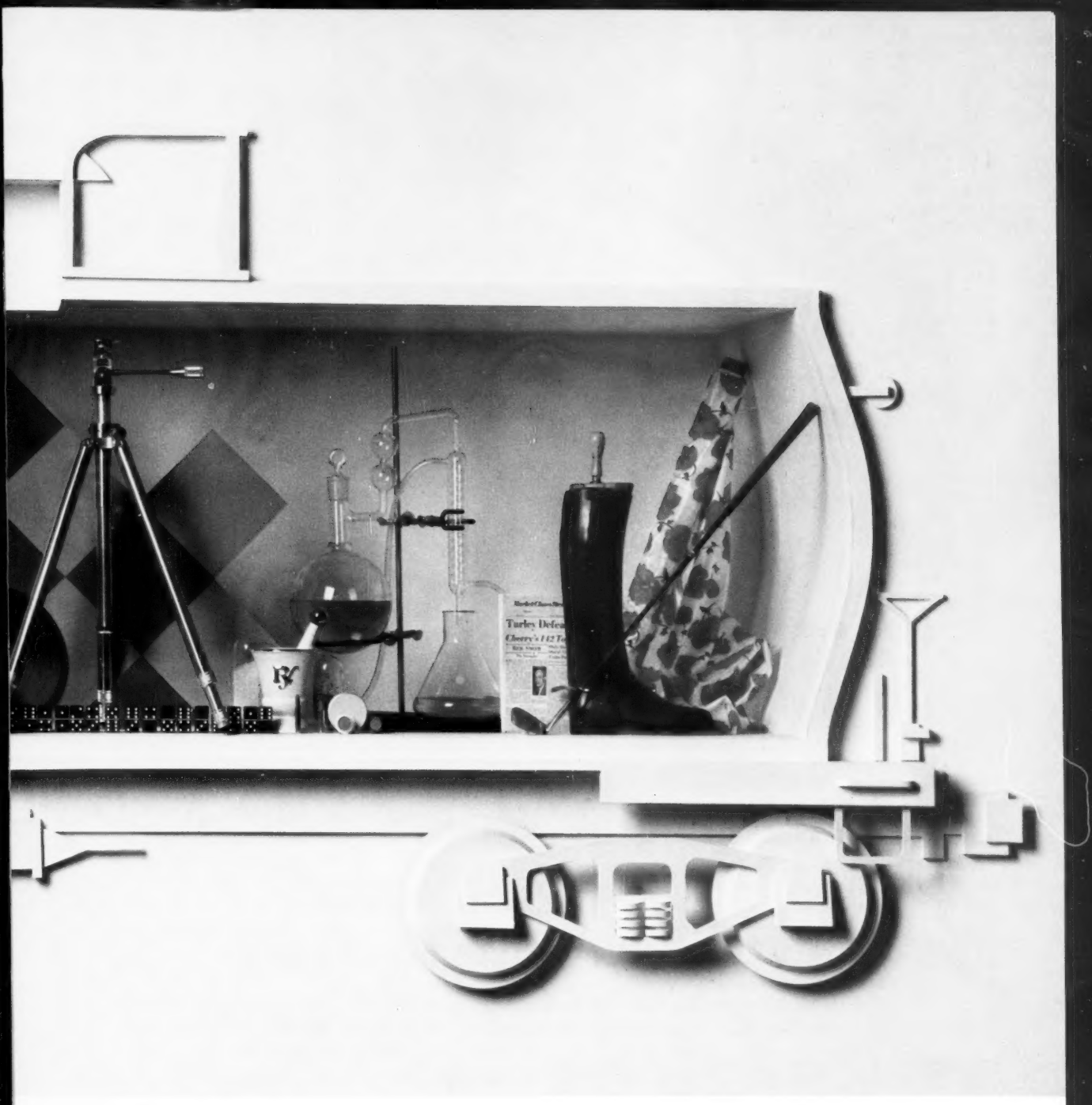

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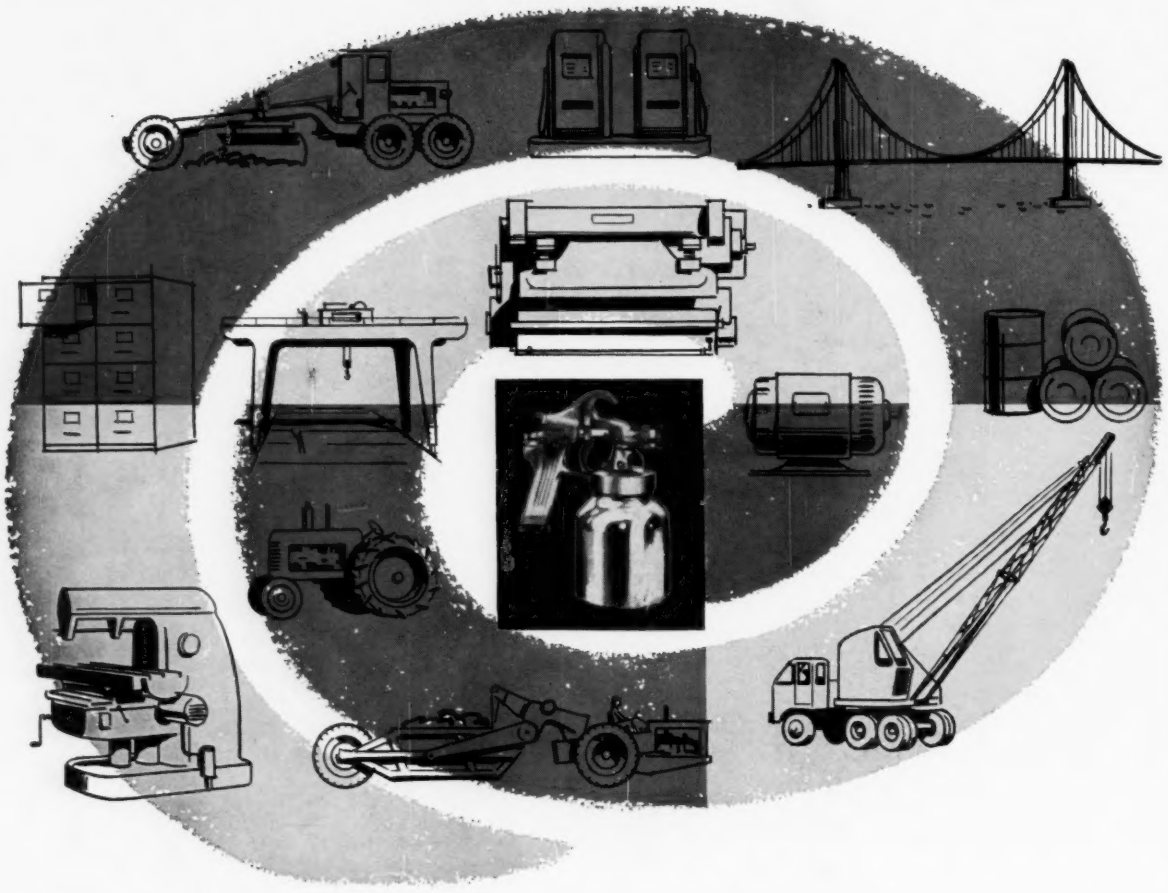

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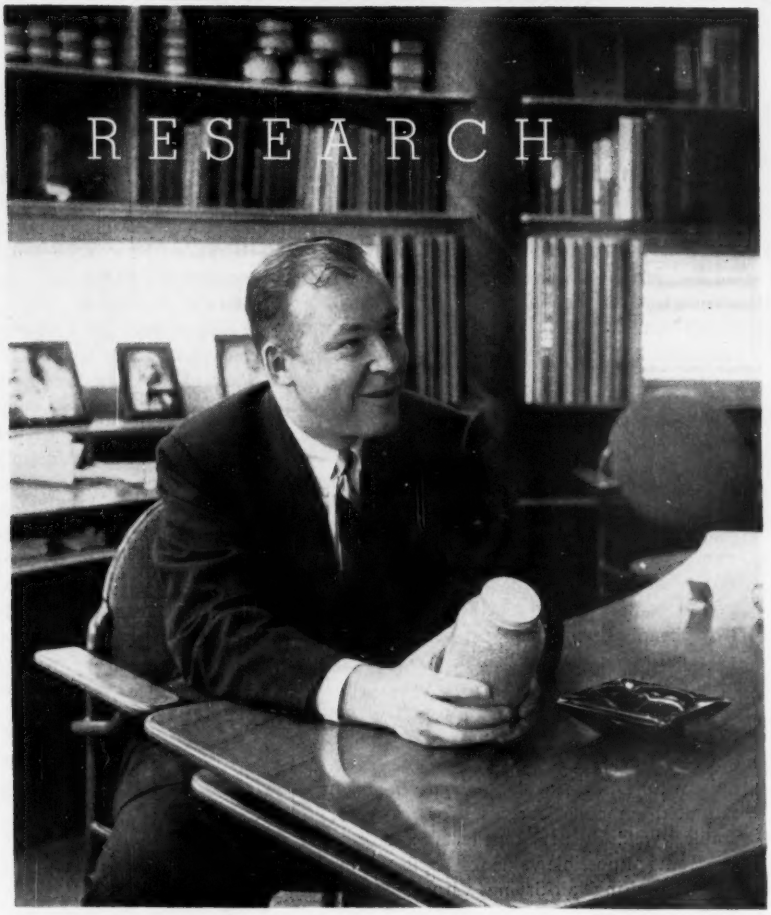


MENTOR: Vice-president Johnson envisions a 50-million-lb. market.

Taking a Shine to Chemicals

This week, giant (estimated $70-million sales) chemical specialty maker S. C. Johnson & Son, Inc. (Racine, Wis.) is hopefully eyeing a new future—in specialty chemicals.

Its plans are geared to a versatile intermediate that turned up in the firm's laboratories about four years ago and is now being produced in a 20,000-lbs./month pilot plant.

Johnson is holding up commercialization of the compound—diphenolic acid (DPA), chemically, 4,4-bis (4-hydroxyphenyl) pentanoic acid *(CW Technology Newsletter, Nov. 15)*—for 6-10 months, until it's proved useful to chemical process companies. Building a plant would take another year.

But Samuel Johnson, Jr., service products division vice-president, is optimistic on DPA's prospects. He envisions a "near-future" DPA market —coatings, plastics, etc.—of 5-10 million lbs. /year, at a target price of 40-50¢/lb. and 25-50-million-lbs./-year sales in 5-10 years.

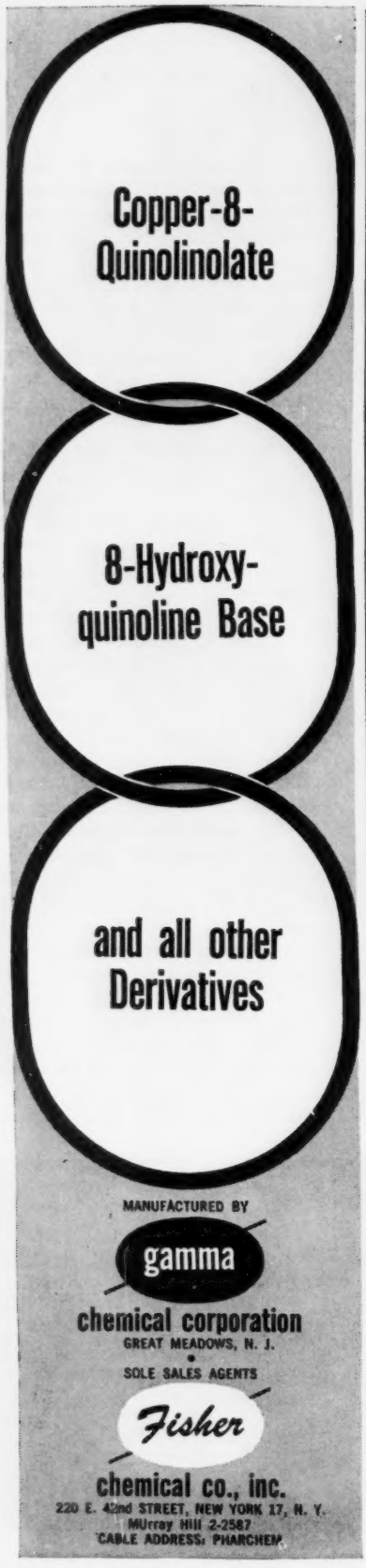
Drive for Diversification: Longtime (since 1886) waxmaker S. C. Johnson has been branching out into nonwax products only since 1953, launching its insect repellent Off, for example, in '57. (The product contains diethyl toluamide, developed by the U.S. Dept. of Agriculture and manufactured by Hercules Powder Co.) And, while chemical manufacturing will be a new venture for the company, it has some background in manufacturing multimillion - pound quantities of synthetic polymers and latices for captive use. (These are generally made with raw materials supplied by CPI companies, e.g., Rohm & Haas.) Among its new specialty items are maintenance waxes, new cleaners, industrial coolants, dip coatings, citrus and vegetable waxes.

These advances are largely the result of the company's own research, led by J. V. Steinle, vice-president, research and development division. But at least one new product, Porelon, was acquired from outside *(CW, Sept. 27, p. 78)*. Porelon *(CW, Nov. 2, '57, p. 84)* was developed by Perma Industries, Inc. (Los Angeles). A sponge-like material, it may have uses in long-lived, stamp pads, etc.

According to W. H. (Bud) Keland,

PROBER: Research chief Steinle eyes new uses.

ENGINEER: Pavilonis heads new DPA pilot plant.



manager of the DPA enterprise, the new compound's potential is primarily in the coating, plastics and oil additives fields. But it's also being looked at by both S. C. Johnson and a spate of CPI firms for use in agricultural chemicals, synthetic detergents and emulsifiers, lubricating agents, oxidation-corrosion inhibitors, cosmetics, flame retardants and extinguishing agents, synthetic lubricants and hydraulic fluids, metal processing and fabricating aids, textile chemicals and biologicals.

Secret of Success: DPA's bid to handle this variety of jobs depends on its chemical structure. The compound contains eight reactive sites—two phenolic hydroxyls, four reactive ring positions, the aliphatic carboxyl group and the alpha alkyl hydrogen. As a result, DPA enters into a multitude of reactions.

Coesterification of polyhydric alcohols with DPA and long-chain unsaturated monobasic acids, for example, yields water repellents and lubricants of possible value for textiles.

A promising air-drying varnish—which features good hot and cold water resistance and alkali resistance equal to comparable epoxy finishes—is made by acetylating DPA, then reacting the product with soya-type fatty acid and polyhydric alcohol (e.g., pentaerythritol) to yield a mixture of esters. Drying time of the DPA coating is also faster (eight minutes) than is the case of most varnishes, as is the time required for it to be set to the touch (27 minutes).

How It's Made: In the pilot plant, supervised by chief experimental engineer E. J. Pavilonis, levulinic acid, currently purchased from Quaker Oats,* molten phenol and aqueous hydrochloric acid are charged to a 300-gal., glass-lined reactor. The reaction mass is continuously agitated and held at about 140 F for 24 hours. DPA crystals form when the batch is cooled to 90 F. These are vacuum-filtered and washed with water. The crude DPA is then purified, yielding 97% pure light-tan granules having a slightly phenolic odor and a melting point of 167-172 C.

Marketing Plans: Early in DPA's history, its chemical potential was probed by chemists at Armour Research Foundation of Illinois Institute of Technology, under an S. C. Johnson contract. Later DPA's market possibilities were looked into by Booz-Allen & Hamilton, New York management consultants. From here on in, S. C. Johnson expects to concentrate on the sale of basic DPA, manufacturing derivatives only if demand develops. Some of the compound may be used in S. C. Johnson floor coatings, competing with its present Traffic-Cote. But the effort has mainly been to secure patent protection on DPA and its important derivatives. Customers that turn up specific end-uses are welcome to secure individual patent protection. The company also is prepared to offer technical assistance to customers and help them develop DPA uses.

If all goes well, this customer encouragement is expected to flower into firm and expanding DPA markets. To S. C. Johnson, which has kept six staffers on the DPA project for four years and spent an undisclosed sum on its chemical offspring, the payoff will be welcome.

*Item: levulinic acid may be obtained economically as a wood waste by-product.

Rocket Progress

Coming competition for chemical fuels got a flurry of attention at this week's meeting of the American Rocket Society in New York, although chemicals got their share. Electrical propulsion systems with a specific power capability of 0.1 kw./kg. got the nod for space travel from Robert Fox, University of California Radiation Laboratory (Livermore, Calif.). Fox believes they can "compete favorably with chemical or heat exchanger type nuclear hydrogen rockets for the Mars mission and are much superior for missions to the outer planets."

"When we look at the problems associated with the [electrical system] . . . it is evident that research and development work is required on all of them before this goal (interplanetary missions) can be realized," Fox said. "On the other hand, no fundamental problem has yet arisen which forbids the accomplishment of this objective. The problems here do not appear to be more difficult than those associated with the development of modern, high-performance jet and rocket engines."

Now chemical high-propellent systems are on the way, too, according to William Doyle of Temple Univer-

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RESEARCH

sity. Doyle reported on high temperature propellent systems using such compounds in liquid form as fluorine, oxygen, cyanogen and hydrogen cyanide. His fundamental work may help pave the way for new high-propellent systems. So far, ignition and injector cooling difficulties in the hydrogen cyanide system have been corrected. And a new rocket motor with a contoured nozzle is being designed.

EXPANSION

• Atomic Energy Commission laboratories at Oak Ridge will be expanded at a cost of $9.6 million. The additional space in the Central Research Laboratory, and the Instrument Building will enable the AEC to consolidate activities of 13 separate laboratories.

• Champion Spark Plug (Toledo, O.) has opened its new, $1-million research laboratory in Toledo. Facilities include a chemistry lab.

• Hagan Chemicals & Controls Inc. (Pittsburgh) has moved to its new headquarters and laboratory in suburban Pittsburgh. The firm researches detergents, water-treatment processes, corrosion problems, food processing, leather tanning, etc.

• Diamond Alkali Co. (Cleveland) will build a new research center at Painesville, O. Target date for completion: '60.

• New York Testing Laboratories Inc. (New York) has acquired an altitude chamber capable of simulating altitudes up to 200,000 ft. It will be used primarily to test products of subcontractors for government missile projects.

• Wyandotte Chemicals Corp. (Wyandotte, Mich.) has reorganized its Research and Engineering Division into two separate groups—the Research Division and the Engineering and Development Division.

• Olin Mathieson Chemical Corp. (New York) is building a metallurgical research center in New Haven, Conn., to be completed by mid-1959. The firm's Metals Division will run the lab, which includes research, development, and pilot plant production facilities. Cost: $4 million.

• Institute of Paper Chemistry (Appleton, Wis.) will establish a new $50,000 biochemistry lab, plans to study mechanisms of wood development.

LITERATURE

• The full proceedings of the Second UN Conference on Peaceful Uses of Atomic Energy, a 33-volume English edition, may be ordered until Jan. 31, '59, at a prepublication rate of $435 ($70 less than normal price). At a later date, individual volumes will be available, in the range of $15 each; they will include titles such as "Basic Chemistry in Nuclear Energy," "Production of Nuclear Materials and Isotopes." Further information about the set is available from United Nations, Sales and Circulation (Atomic Energy), United Nations, N.Y.

• Catalog 586, available free from Brooklyn Thermometer Co. (New York), contains specifications and prices of more than 1,000 thermometers and hydrometers, including thermometers for general use from —200 to 1050 C.

• A new "Union List of Scientific and Technical Publications of the Libraries of Cincinnati and vicinity" is now available from Roberta Andrews, Librarian, U. S. Public Health Service, Occupational Health Field Headquarters, 1014 Broadway, Cincinnati 2, O. It covers the holdings of 35 libraries to Jan. '58. Price of the publication: $10.

REPORTS

These reports are available from the Office of Technical Services, U.S. Dept. of Commerce, Washington 25, D.C.

• "A Study of the Deterioration of Adhesives in Metal Bonds at High Temperatures" reports on results of a search to find the mechanisms of organic-based adhesive deterioration. The thermal resistance of bonds in aluminum and stainless steel as affected by surface, curing conditions, aging time, atmosphere, and stress during aging are examined. Order PB 131500, $1.25.

• "Chemical Processes as Methods of Achieving High Temperatures" is a report which indicates that diatomic species of the N-N bond, and C-O bond types are the two most energetic known—will yield the highest temperatures available by chemical means. Variation of temperature by pressure, volume changes is discussed. Order PB 131,549, 75¢.

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Laboratory ion exchange column

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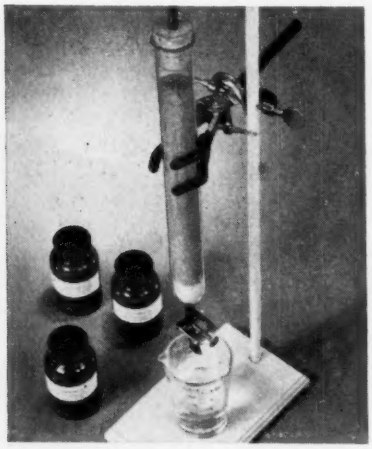
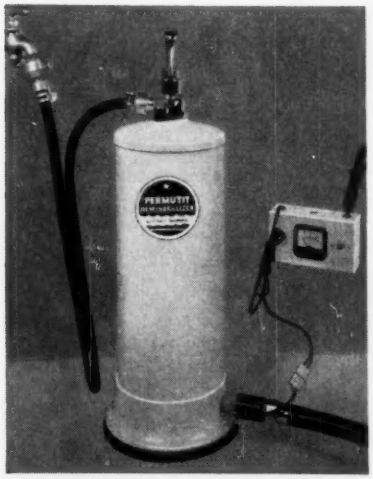


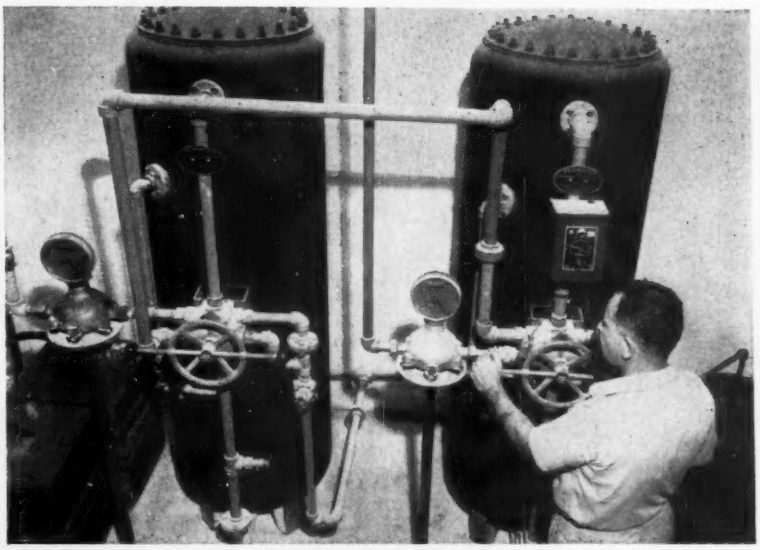
stand, clamps, tubing, stoppers and beakers. The tube will hold sufficient Permutit Q ion exchange resin to remove 20 to 25 grains of hardness.

This simple set-up is used for demonstrating ion exchange processes such as softening, dealkalizing or demineralizing water and for experiments in removal of impurities from process solutions and separation of metals from leached ores or waste liquids.



MBD-6A mixed bed demineralizer

The MBD-6A unit (6″ diam.) contains a mixture of Permutit Q cation exchange resin and Permutit S anion exchange resin. It will demineralize 1 to 2 gpm of water to a low total solids, low CO_2 and low silica content. Refills containing pre-mixed resin are available. Each refill has a capacity of approx. 1500 grains total electrolytes as $CaCO_3$. When the unit is exhausted, the fill may be discarded or regenerated and re-used.



A conductivity cell is mounted in the outlet line to be used with a conductivity meter for measuring the electrolyte content of the effluent and thus indicating when the resin bed is exhausted.

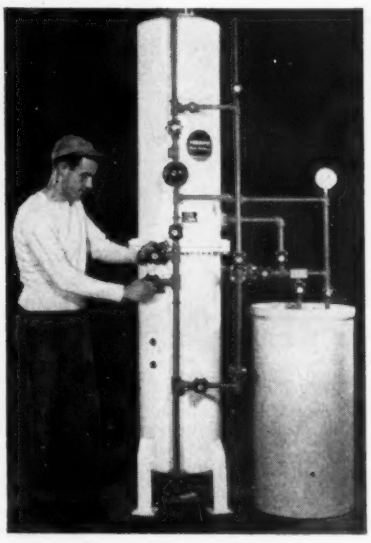
Standard equipment includes the MBD-6A with initial fill, faucet adapter and hose and conductivity cell. Optional equipment: conductivity meter, resin refills and an auxiliary tube for regenerating the resins.

MBD-15 mixed bed demineralizer

This compact unit will demineralize 6 to 7½ gpm of water to an average conductivity of 0.15 micromhos (approx. 6,000,000 ohms specific resistance per cm or 0.05 ppm total electrolyte content). CO_2 will be reduced to 0.1 ppm and SiO_2 to about 0.1 ppm.

Capacity of the MBD-15 between regenerations is approx. 20,000 grains total electrolytes. For example, it will demineralize 3420 gallons of water containing 100 ppm total electrolytes or 1710 gallons containing 200 ppm total electrolytes. When the unit is exhausted, the resin bed can readily be regenerated without removing the resins from the tank. The plastic regenerating tank is used for both regenerants.

The MBD-15 is supplied piped and partially assembled and requires connecting together only 3 flanges other than the connections to influent, effluent and waste lines.



16″, 24″ and 30″ diam. single bed units

(see photo above)

Diameter of unit	16″	24″	30″
Approx. flow rate (gpm)	10	20	30

Construction of these "package" units is of the same heavy-weight materials used for Permutit's large custom-designed units and includes rugged PVC plastic interior piping and plastic strainers, full 3/16″ thick rubber lining steam-cured and vulcanized to the heavy gauge steel shell. The entire lining is spark-tested at 25,000 volts. Exterior piping is high strength plastic.

Standard equipment includes a rubber-lined Permutit multiport control valve for each unit, acid pump, corrosion-proof plastic tank for cation regenerant and steel tank for anion regenerant. All parts are normally kept in stock for immediate shipment and are described in standard drawings.

° ° °

For complete information, write to The Permutit Company, Dept. CW-11, 50 West 44th St., New York 36, N. Y. or Permutit Company of Canada, Ltd., Toronto 1, Ont.

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Customers Cue Company Awareness

CW PHOTOS—LIONEL CRAWFORD

At S. B. Penick seminar, Crookes-Barnes President Edmund Beckwith, one of eight drug industry speakers, shows marketing 'tools'.

For process industry management struggling for improvement in the vital area of customer relations, there's an object lesson in an employee seminar currently being run by S. B. Penick & Co. (New York).

Next Thursday evening, some 43 Penick employees will gather in New York's Railroad-Machinery Club for cocktails, dinner and the fourth of eight weekly lectures. Purpose of the lectures: to indoctrinate employees all down the line in the problems and operations of one of Penick's major customers, the pharmaceutical industry. Such training gives Penick employees customer awareness, a clearer insight into the results of their own operations.

The seminar is bringing Penick people in touch with outstanding speakers from the pharmaceutical industry, who are telling participants about the history of the industry, its marketing and purchasing problems —especially as far as the Food & Drug Administration is concerned, manufacturing procedures, research and quality control, application of pharmacology to the pharmaceutical industry and the value of close communication between a company's research, production, control, sales and management staffs. Attending the lectures are Penick's sales and purchasing people, its three plant superintendents, their assistants, and the chief quality, research and development chemists.

Program Nucleus: Nucleus of the Penick program is the company's New York Quinine & Chemical Works Division. The division specializes in the manufacture of bulk fine chemicals, over 95% of which go to the pharmaceutical industry.

Originally the chemical manufacturing unit of McKesson & Robbins, NYQ became a wholly owned subsidiary of Penick—44-year-old basic materials manufacturer—in '47. Today, the division is headed by Albert Penick; Barclay Mackinnon is first vice-president.

Credit and responsibility for the seminar's conception belong to NYQ's William Thawley, general sales manager, and Lawrence Driever, personnel director. They originated the program as a way to help NYQ's

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Benzene	Dimethyl Phthalate	Iso-octyl Alcohol	Perchlorethylene
n-Butyl Acetate	Dimethyl Sebacate	Isophorone	n-Propyl Alcohol
n-Butyl Alcohol	Dipropylene Glycol	Isopropyl Acetate	Propylene Glycol
Butyl Cresols	Dodecyl Alcohol	Isopropyl Alcohol	Pyridine
Butylene Glycol	Dodecylbenzene	Methyl Alcohol	Toluene
Capryl Alcohol	Ethyl Acetate	Methyl Amyl Alcohol	Trichlorbenzene
Carbon Tetrachloride	Ethylene Dichloride	Methylene Chloride	Trichlorethylene
Chlorbenzene	Ethylene Glycol	Methyl Ethyl Ketone	Tricresyl Phosphate
Chloroform	Ethyl Hexanediol	Methyl Hexyl Ketone	Triethyl Amine
Dibutyl Phenol	Ethyl Lactate	Methyl Isobutyl Ketone	Triethylene Glycol
Dibutyl Phthalate	Glycerine	Monoethanolamine	Trimethyl Borate
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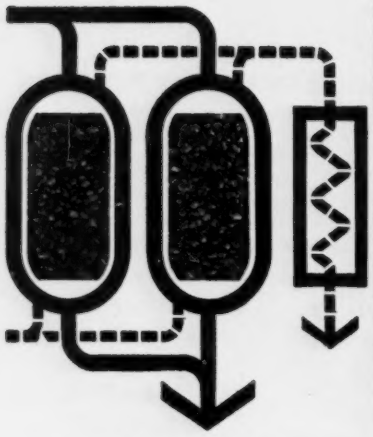

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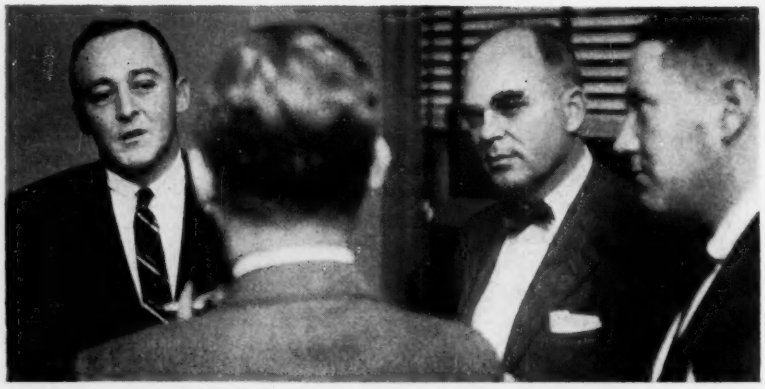
Thawley and Albert Penick chat with speaker Beckwith at dinner.



Session ends with discussion of other customer problems.

sales force better understand its customers' problems.

Early in the program's development, however, Penick President S. B. Penick, Jr., saw the advantages of expanding the seminar to include personnel throughout the Penick organization. Since then, according to Thawley, the problem has been to keep the group down to a workable number.

"We're interested primarily in the younger men in the company," Thawley told *CW* at the seminar's second lecture (*see pictures*). "We're limited in facilities, so we're taking the men we feel can benefit most from a new knowledge of pharmaceutical industry methods and problems."

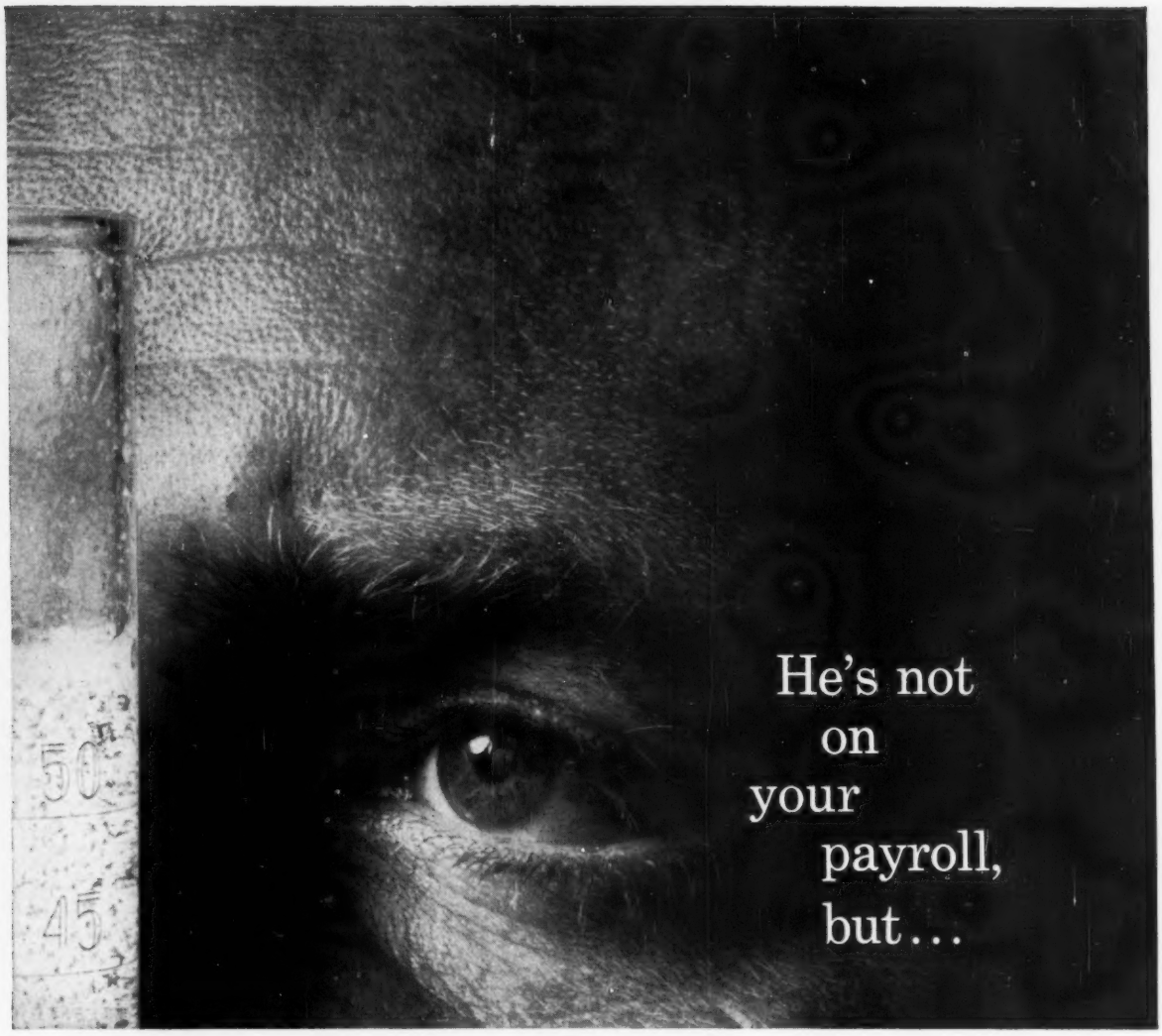
Old Timers Gain, Too: But benefit isn't limited to the younger members. According to Mackinnon, "It's surprising how much of the material covered so far in the lectures had escaped my mind. For those of us who should know the subjects, the lectures serve as a good review."

Mackinnon added, "The current seminar isn't a polished, finished effort; it's a stepping stone. Next time, we'll do a better job; and next year, we may run one using our own people as lecturers."

Wide Interest Shown: From the beginning, other companies have expressed an interest in the seminar, according to Thawley. Several pharmaceutical concerns requested that the lectures be taped for possible use by them later.

Penick employee interest in the seminar was pretty well summed up by Roy Dietrich, sales trainee and recent graduate of the University of Pennsylvania who told *CW* that the seminar was already worth "a week's pay" to him.

Dietrich added, "In college nowadays, they keep drumming home the theme that a graduate should go with a big company, so he can take advantage of training courses. I think the ideal situation is to have a training course in a small company. That's what we have here."



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Nuclear Precheck

Problems of water and air pollution from Michigan's first nuclear power plant are getting plenty of attention, although the plant won't start production for another two years. Details of the "preventive" program were told to CW last week.

Engineers are already busy at the site of the Enrico Fermi power plant near Monroe, Mich., taking daily samples of air, muck and water. With current worldwide uneasiness over effects of radiation, atomic power experts want to be sure of control over radioactivity from the Michigan plant. John G. Feldes, health physicist for the plant, is directing the public safety program that tests air and water by means of a 100-ft. weather tower, circling planes and earth-drilling equipment.

The fully instrumented tower on the site is operated by the University of Michigan's Engineering Research Institute. Measurements of wind speeds and direction, precipitation and temperatures began in late '56.

Movement of radioactive materials that might come from the new plant is also being forecast from findings of small planes circling as much as 30 miles from the plant site. The planes gather air samples after radioactive test materials are released from the plant area.

These continuing studies are a hedge against future accidents and eventualities. Actually, no radioactive material is ever expected to be released through the air. Neither are highly radioactive materials to be released by water. But studies are being made of the flow of underground water currents in the vicinity of the plant site to determine potential effect on nearby wells.

In the course of regular operation, only low-radiation-level wastes will be deposited at the plant site, and then only after the short-lived isotopes have disappeared. Remaining radioactive wastes will be treated by ion-exchangers or by dilution with water.

There will be a continuous monitoring of waste and discharge areas prior to operation. Purpose is to establish current averages of radioactivity in the area for checking levels after the plant begins operation. Any abrupt rises over preoperational levels will indicate something amiss.

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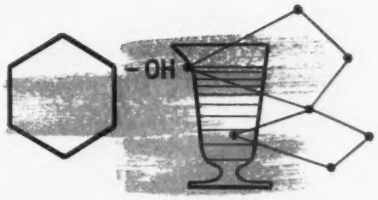
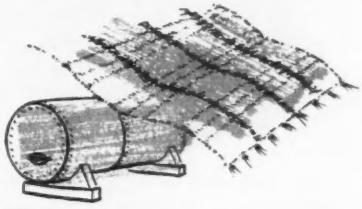
☐ ▶ **Economical, Efficient "Freeze-Drying"**—Freeze-drying is used to dehydrate heat sensitive substances at low temperatures. In the processing of blood plasma and the manufacture of penicillin, streptomycin and other pharmaceuticals, dry ice or liquid CO_2 is used to freeze the item being dried. Also, during the drying stage, dry ice is used to condense the moisture as it is sublimed under vacuum. Capable of quickly attaining and maintaining the extreme low temperatures required, CO_2 has the added advantage of requiring only a small capital outlay.

☐ ▶ **Precipitation of Carbonates**—Carbon dioxide in its gaseous form is used to precipitate carbonates from water solutions. Ammonium bicarbonate and lead carbonate are examples. Bakeries and plastics manufacturers are among the many users of ammonium bicarbonate.

☐ ▶ **Simplifies Pulverizing of Materials With Low Melting Point**—Many substances tend to melt or smear because of the heat generated in a milling process. DDT and vegetable fat flakes which are waxy and Teflon resin which is very tough and elastic are examples. In the low temperature pulverizing process the ingredient is mixed with crushed dry ice or low pressure carbon dioxide liquid is injected directly into the ingredient. These methods effectively inhibit the melting or smearing, prevents plugging and reduces horse power requirements. Gaseous carbon dioxide is also used to form an atmospheric "blanket" to effectively prevent fire during the grinding of flammable materials. An example of this application is the grinding of phosphorus pentasulphide and flammable resin materials.



☐ ▶ **Fireproof "Blanket" For Stored Phenol**—Phenol is a toxic, corrosive, flammable compound and is stored in an inert atmosphere under slight pressure to reduce vaporization, prevent oxidation and at the same time provide a non-flammable atmosphere. Carbon dioxide is also used as a pressure medium in transferring liquid phenol.



☐ ▶ **Effective Inerting Agent**—There are many times when an inert atmosphere is needed to prevent fire or explosion. Before welding a tank that has been used for the storage of flammable liquid, CO_2 is used to inert the atmosphere in the tank so that welding can be done with no danger of explosion. CO_2, acting as an effective atmospheric "blanket," also prevents oxidation and "skinning" of paints and oils.

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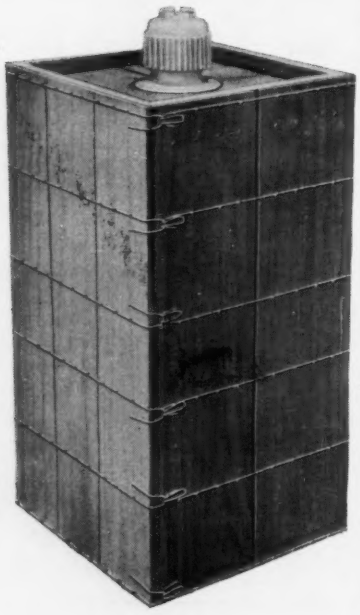

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ADMINISTRATION

State Wins Gas Fight

The recent U.S. Supreme Court decision upholding the Texas Railroad Commission's order that a pipeline must offer to take gas from all producers in an area under the same terms ("ratable taking") is being hailed in Texas as a "tremendous victory" for state regulation.

The commission had ordered Permian Basin Pipeline, subsidiary of Northern Natural Gas Pipeline Co., to buy and process gas from all wells in the Puckett-Ellenberger gas field in Pecos County (*CW, Nov. 2, '57, p. 46*).

"The Railroad Commission is to be strongly commended for its wise and bold enforcement of the common purchase statute," said Eugene Locke, president of Texas Independent Producers and Royalty Owners Assn.

Locke said the decision had upheld state conservation powers against contentions that the Federal Power Commission has exclusive control over gas production in interstate commerce, and that the Texas common purchase statute is unconstitutional as a burden on commerce.

LABOR

OCAW Complains: Oil, Chemical & Atomic Workers Union has filed a complaint against Metal Trades Council of AFL-CIO, contending that certain practices, "if allowed to continue, [would] permit the Metal Trades to organize every industry in America." The complaint will be taken up at jurisdictional meetings in Washington, D. C., in December.

O. A. Knight, OCAW president, says the Metal Trades group "is distorting the merger agreement between AFL and CIO and the AFL-CIO constitution" by organizing in jurisdictions assigned to other international unions.

•

Contract Suit: Oil, Chemical & Atomic Workers International Union Local 4-367 has started suit in federal district court at Houston, Tex., charging that Ethyl Corp. violated an oral agreement concerning members' group insurance.

The suit contends that the union and the company reached an agreement Sept. 19 that workers would have group hospitalization coverage on a

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- *Gramicidin*
- *Tyrocidine Hydrochloride*

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Initial Discoloration	15 min.
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Polystyrene, 60°C., 19 days	No effect

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ADMINISTRATION

contract under which they would pay 20% of their medical bills, and the insurance carrier, Aetna Insurance Co., the remaining 80%.

The union claims that later in September Ethyl said that in the case of major medical expenses the employees would have to pay 25% of the bills and the insurance company 75%. The union agreed to this change under protest so that members would have group insurance coverage after Oct. 1, expiration date of the prior contract. The union asks the court to require Ethyl to pay premiums on an 80-20% type of major medical insurance policy.

KEY CHANGES

J. C. Gauntlett to vice-president, International Operations, and manager of the Canadian Pacific Division, The Upjohn Co. (Kalamazoo).

Nicholas M. Adams to vice-president, National Aluminate Corp. (Chicago).

John E. Gaston and **John G. Moore** to board of directors, Mallinckrodt Chemical Works (St. Louis).

William Weston to vice-president, Ultra Chemical Works, Inc., division of Witco Chemical Co., Inc. (New York).

Raymond H. Marks to vice-president, sales, Cary Chemical, Inc. (New Brunswick, N. J.).

Jack H. Dollinger to president, Ferro Chemical Corp., subsidiary of Ferro Corp. (Cleveland).

Sam Salem to general manager, chemical division, General Tire & Rubber Co. (Akron).

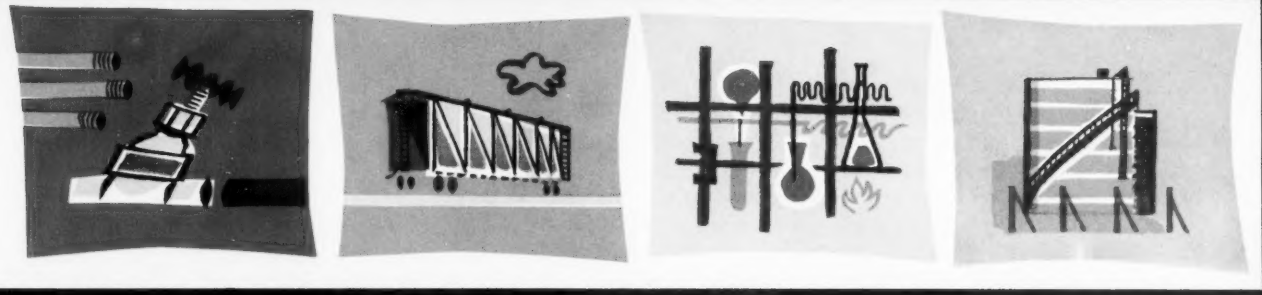
DIED

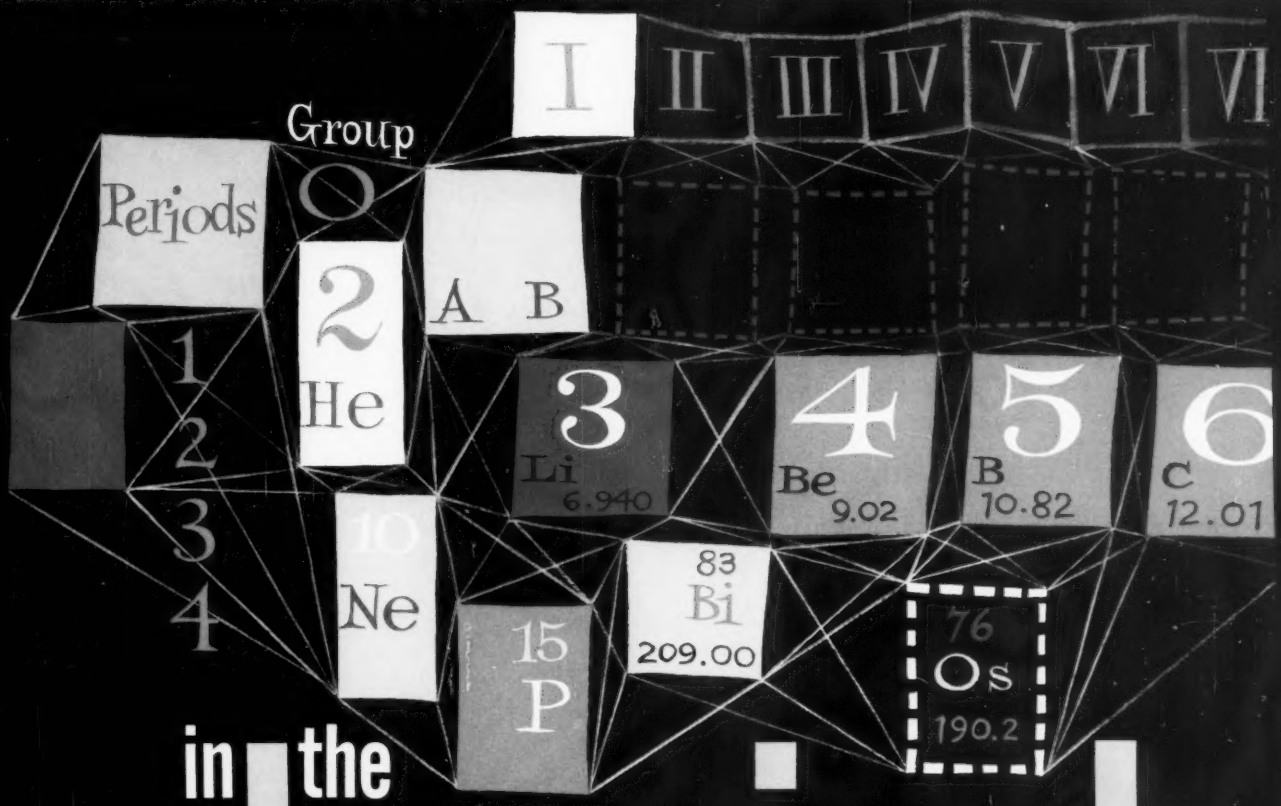
Louis Veillon, 84, first chemist hired by Monsanto Chemical Co., at Erlenbach-Zurich, Switzerland.

KUDOS

To **Robert L. Pigford,** department head and professor of chemical engineering, University of Delaware, the William H. Walker Award, by the American Institute of Chemical Engineers.

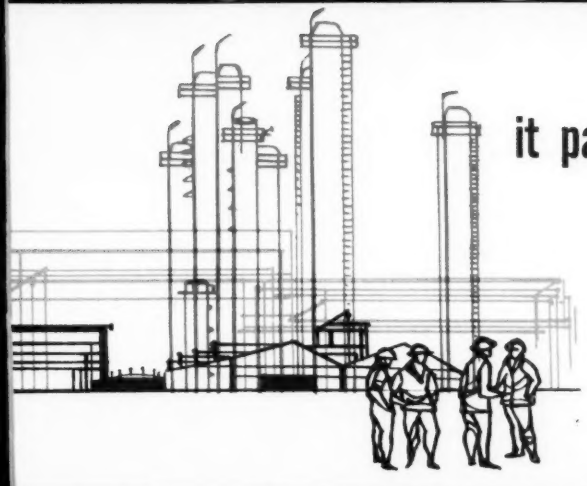
To **Frank K. Schoenfeld,** vice-president, The B. F. Goodrich Co., the Industrial Research Institute Medal for 1959.





in the chemical industry

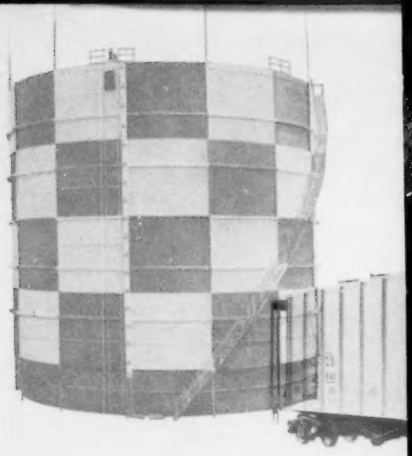
it pays to plan with GENERAL AMERICAN



New use for a gasholder—cost savings on bulk shipments of dry chemicals—heated tank cars—a "rubber barrel" for hydrochloric acid . . . these are some of the ways General American helps solve problems in transportation, production and marketing for the chemical industry.

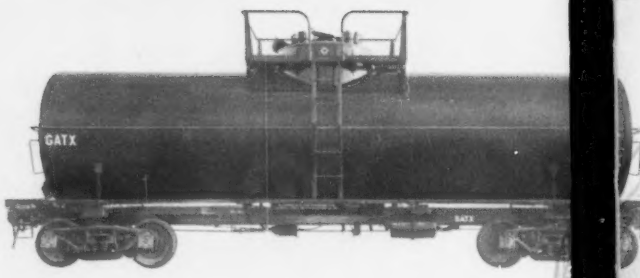
"STOCKROOM" FOR LINDE ACETYLENE

When the new acetylene plant of Linde Company, division of Union Carbide Corporation, went "on stream" at Montague, Michigan, a new 100,000 cubic foot Wiggins Dry-Seal Gasholder played a vital operating role. Acetylene passes through this "stockroom" on its way to DuPont for use in the production of neoprene. The gasholder provides acetylene storage and serves as surge capacity when there are emergency requirements. The Wiggins Dry-Seal Gasholder, first system to get away from the "bell jar" type with seals of water, tar or grease, can be built to any capacity from 50 to five million cubic feet.



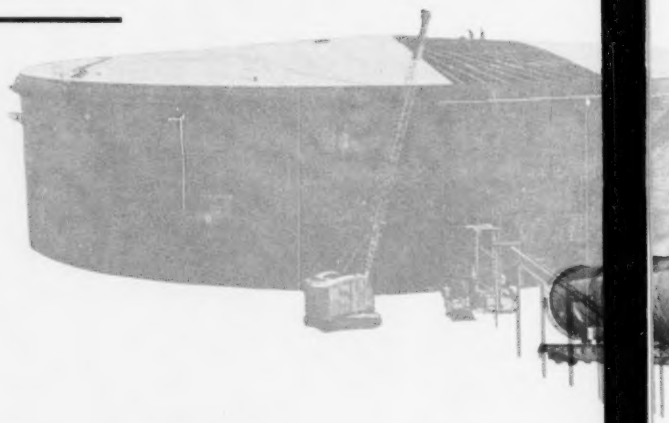
NaOH SHIPPED BEST IN GATX INSULATED TANK CARS

How can you ship caustic soda in all weathers, when freezing (at 40° F.) can be disastrous? That question has been answered by General American with tank cars that carry 6 inches of insulation around the tank plus General American's exclusive half-oval heater coils. In addition, there's special insulation around anchorage and bolster areas. Protection of these shipments is typical of General American's work in many fields. If you ship liquids in bulk there's a General American tank car built (or that can be built) to your needs.



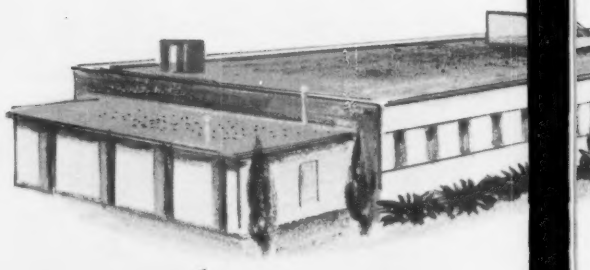
HOLDS AS MUCH AMMONIA AS 770 TANK CARS

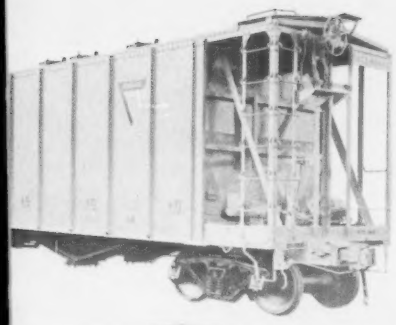
You could discharge the loaded capacity of a train of tank cars more than seven and a half miles long into Phillips Chemical Company's huge aqua-ammonia storage tank at Cactus, Texas. 220 feet in diameter and 48 feet high, this tank is one of the largest ever built for liquid storage. Liquid is pumped in at a rate of 250 gallons a minute for 37 days before the tank is filled. Phillips' new tank was engineered, fabricated and site-erected by General American. General American has fabricating plants, skilled crews and modern erection equipment throughout the country to facilitate construction of storage structures.



TEST DRY YOUR MATERIALS WITHOUT CHARGE

At General American's East Chicago pilot plant, you can test the drying and reaction of your materials in the widest range of drying equipment ever assembled. Louisville engineers will work with you—study your materials and needs, make recommendations for type of equipment, size and heating medium. You can check these recommendations for yourself through practical tests. See how your product reacts in continuous atmospheric rotaries, fluidized bed dryers, solvent strippers, vacuum dryers. When you decide on a Louisville Dryer, it is built to provide efficient and economical service for years.



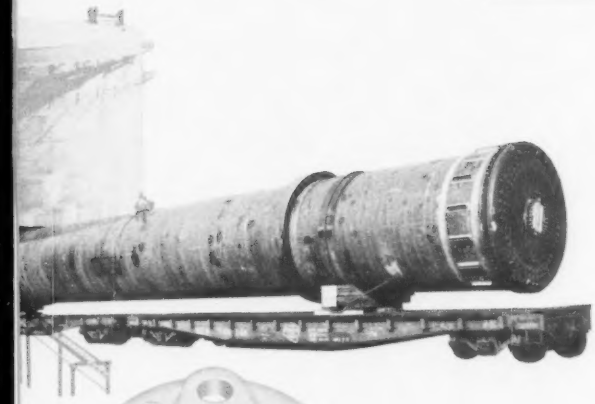


FOR BAKELITE®—A NEW COST-SAVING METHOD

Union Carbide Corporation's Bakelite Division has been making interplant bulk shipments in hopper cars for years. In 1955 Bakelite supplemented this type of transport with 15 AIRSLIDE® cars. Bulk shipments of resins in AIRSLIDE cars provide savings, deliver products free of contamination. Bakelite found there were savings on related costs, too. So successful were the AIRSLIDE cars that within a year Bakelite followed up with an order for 25 additional cars. To learn more about this method of transportation, please use the information card.

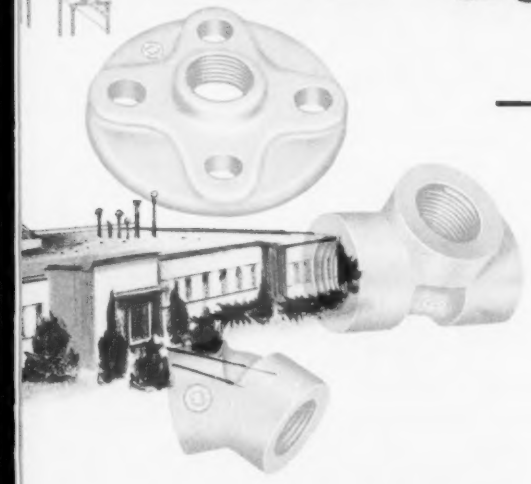
420,000 GALLON "RUBBER BARREL" FOR HYDROCHLORIC ACID

Dow Chemical posed a problem. "How can we store 10,000 bbls. of hydrochloric acid without corroding the tank or contaminating the acid?" Terminal engineers from General American and Dow came up with the answer—a specially-constructed 10,000 bbl. rubber-lined tank with rubber-lined pipes and CARBATE® pumps. 37% acid is brought to the terminal in 5,000 bbl. lots. It is stored pending distribution in tank car quantities. For more dilute solutions, water is metered to reduce the acid to the required concentration. This operation is typical of General American's specialized services in handling "difficult" liquids. To find out how we would approach your problem, please use the information card.



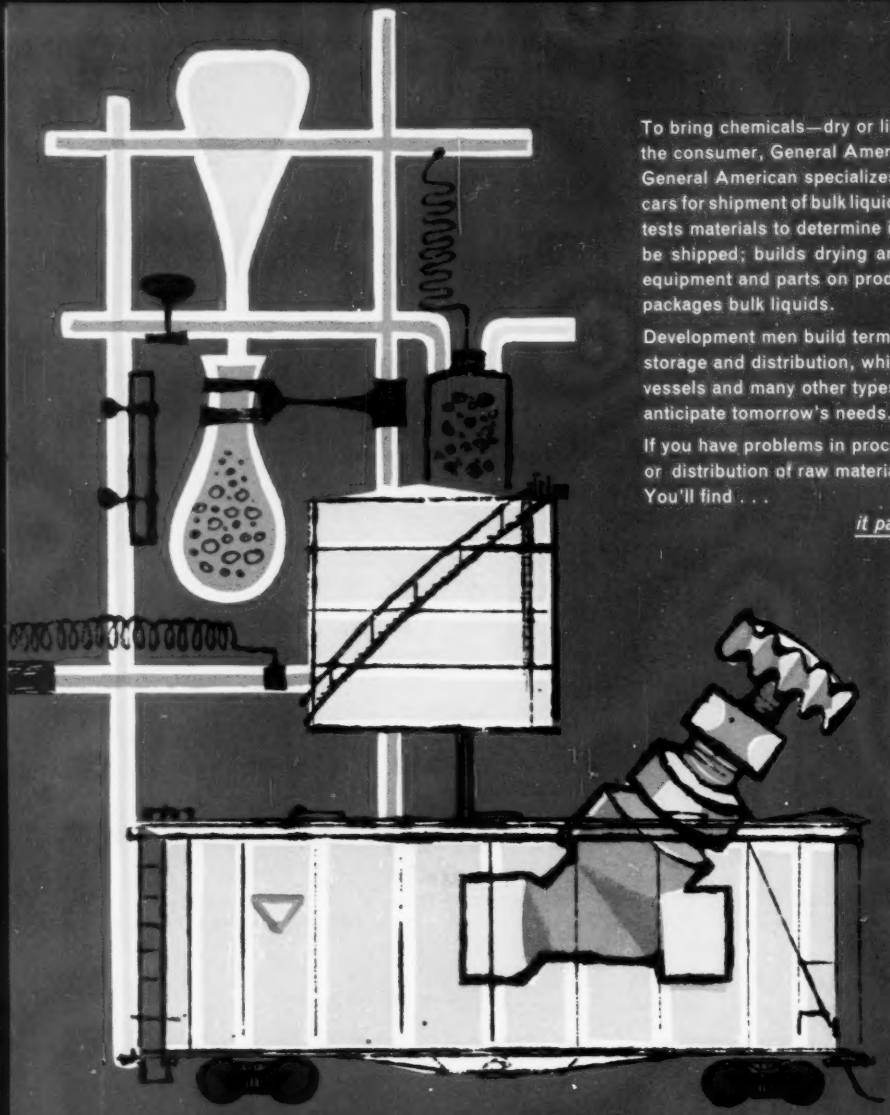
WHEN A NICKEL SURFACE IS NEEDED

You can't economically nickel-plate a dryer 100 feet long—but you can line it with KANIGEN® coating. Wherever you need the protection of nickel, you can use this hard, uniform, chemically-deposited nickel alloy coating that gives low cost metals a hard, resistant surface equal to or better than expensive alloys, solid metals or clad materials at a fraction of the cost. Tank cars lined with KANIGEN are used by General American wherever a nickel surface is indicated. Your equipment or parts—even to a small relief valve—can be barrel-coated, rack-coated or jig-coated at plants in East Chicago, Indiana; Sharon, Pennsylvania; and Compton, California.



PVC PIPE FITTINGS AND VALVES

Walworth Company markets a full line of chemical-resistant polyvinyl chloride pipe fittings and valves which are corrosion resistant, heat resistant and able to withstand high pressures. Choice of General American by Walworth to mold these was no accident. Precise molding of intricate valve parts and threads can spell the difference between a tight connection and a possibly disastrous leakage. Because of General American's system of rigid quality controls, Walworth knows that parts molded by General American will match specifications. Through General American's research and development department, Walworth is assured the benefit of latest techniques and materials available.



To bring chemicals—dry or liquid—in all their varieties to the consumer, General American works directly with producers. General American specializes in the design of new types of cars for shipment of bulk liquids and dry powders. General American tests materials to determine in what type car they can best be shipped; builds drying and conveying systems, protects equipment and parts on production lines, stores and packages bulk liquids.

Development men build terminals to solve the problems of storage and distribution, while technical experts engineer pressure vessels and many other types of production equipment to anticipate tomorrow's needs.

If you have problems in processing, shipping, storage or distribution of raw materials or finished products, call us. You'll find . . .

it pays to plan with General American.

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- ☐ Leased facilities at General American Tank Storage Terminals
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- ☐ Plastic pipe, valves and fittings
- ☐ Airslide® cars for bulk shipment of dry materials
- ☐ Gas Conservation Structures and Gas Handling Equipment
- ☐ Kanigen® Coating
- ☐ Custom fabrication and full erection
- ☐ Please have a General American Engineer call for an appointment.

Slagging Slices Gasification Costs

At Grand Forks, N. D., this week, the U.S. Bureau of Mines is putting the finishing touches on a new fixed-bed pressure gasification pilot plant designed to produce synthesis gas from lignite. Scheduled to go into operation early next year, the pilot unit will give management its best look at the economic advantages of operating a Lurgi-type gasification process under slagging conditions.

Goal of the Grand Forks Lignite Experiment Station is to further the long-range development of North Dakota's lignite reserves—some 350 billion tons. So far, the exploitation of these reserves and other vast stores of low-grade coals in the U.S. has been limited by the abundance of high-grade coals, oil and natural gas. And even though lignite utilization hasn't become an economic necessity in this country, the chemical process industries have a stake in its long-range development as a chemical raw material.

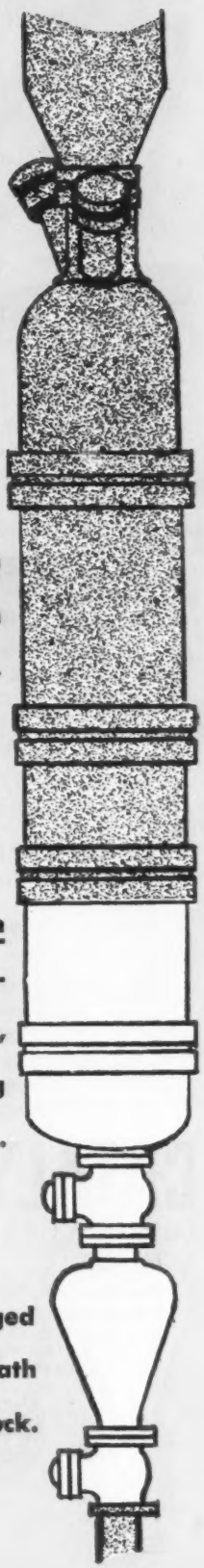
Total Gasification: To exploit the possibilities of using lignite as a source of synthesis gas for the production of ammonia, methanol, synthetic chemicals, liquid fuels and pipeline gas, the Grand Forks station has studied a number of gasification systems. Since '45, it has been concentrating on a total gasification process in which part of the lignite is burned with oxygen to provide the heat required for the endothermic gas-forming reaction between carbon and steam.

Since most synthesis processes operate under pressure, operating economics favor pressure gasification. Reason: cost of compressing the synthesis gas is eliminated. Of the two reactants fed to the gasifier, steam is readily available under pressure and the volume of oxygen that must be compressed is less than one-third of the volume of the gas produced.

Temperature Boost: The processing modification to be explored in the bureau's new pilot plant involves a switch to higher-temperature operation. Gasification of lignite by the conventional Lurgi process requires a high ratio of steam-to-oxygen to keep the temperature of the fuel bed below the fusion point of the ash (to prevent formation of clinkers that interfere with removal of dry ash from the reactor's rotating grate).

With this conventional operation, steam requirements are far above that needed for the actual gasification reaction. Result: product gas contains high concentrations of undecomposed steam; heat losses are high; large volumes of waste liquor must be handled.

To eliminate these undesirable characteristics, the Grand Forks pilot plant has been equipped with a slag-discharging device so that the reactor can be operated at temperatures as high as 2600 F—well above the melting point of the ash. Operation under slagging conditions may mean added cost for higher-temperature


1—Lignite is fed into a conventional charging section . . .
2—Gasified by reaction with steam in a fixed-bed . . .
3—New slagging section permits higher-temperature operation, . . . boosts gas-making capacity . . .
4—Fused ash is discharged through a quench bath and slag lock.

Olin Mathieson

Fuel for tomorrow's planes

A new fuel which holds great promise of meeting the exacting demands of the U.S. Air Force has been developed by Olin Mathieson Chemical Corporation.

Olin Mathieson chose Catalytic Construction Company for engineering services and for the complete management of construction of the new plant to produce this fuel.

Catalytic's unique ability of uniting experience and technical skill with imagination is again meeting the challenge of plants for tomorrow—today.

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refractory materials and for fluxing materials to add fluidity to the ash. But the bureau expects to realize a number of operating improvements that should go a long way toward improving the over-all economics of lignite gasification. Most important of the hoped-for advantages:

- Higher gas-making capacity — gasifier operation is controlled by mass flow of gaseous components through the fixed bed. By eliminating the use of excess steam to cool the ash, the slagging system limits gas input to reactants needed for the gas-forming reaction.
- Higher thermal efficiency—with less undecomposed steam in the exit gas, cooling and heat recovery are simplified.
- Steam requirements are reduced.

Special Features: Key equipment in the bureau's pilot gasifier is the slag-discharge system. It permits continuous removal of the slag while the reactor is maintained at a pressure of 25-30 atmospheres. The specially modified unit drops the slag into water for quenching and granulation; from there it's collected in a lock hopper and discharged intermittently as a slurry. Another special feature of the pilot unit is its sectional design, which permits fuel-bed heights of 6, 9, 12 and 15 ft. to be tested simply by adding or removing sections between the coal charging section at the top and the slagging section at the bottom.

Cooling-Tower Tips

Two new tips for cooling-tower users from Fluor Products Co. (Whittier, Calif.): (1) a compilation of weather data* required for the design of atmospheric heat exchange equipment; (2) a process for applying protective epoxy coatings to both new and used cooling towers.

Weather Data: To tabulate the weather information needed for optimum design of cooling-tower installations, Fluor Products (a division of The Fluor Corp., Ltd.) amassed all of the summer hourly observations taken in the last ten years at some 400 U.S. (and several foreign) weather stations. These data — totaling about 10 million separate observations of wet- and dry-bulb temperatures, speed and direction of prevailing winds—were summarized and analyzed by electronic tabulating equipment.

The results are presented in the new book with tabular and graphic interpretations. Included are psychometric charts for 49 selected locations, plus wet-bulb-temperature maps of the U.S. The temperature iso-lines shown on the maps are calculated for high-, medium-, and low-design values, with special attention to the extreme conditions of the summer months.

The compilation, said to be one of the most comprehensive interpretations of cooling design data ever made, is expected to be a valuable engineering aid for pegging maximum permissible heat loadings, preventing extravagant overdesign of atmospheric cooling systems.

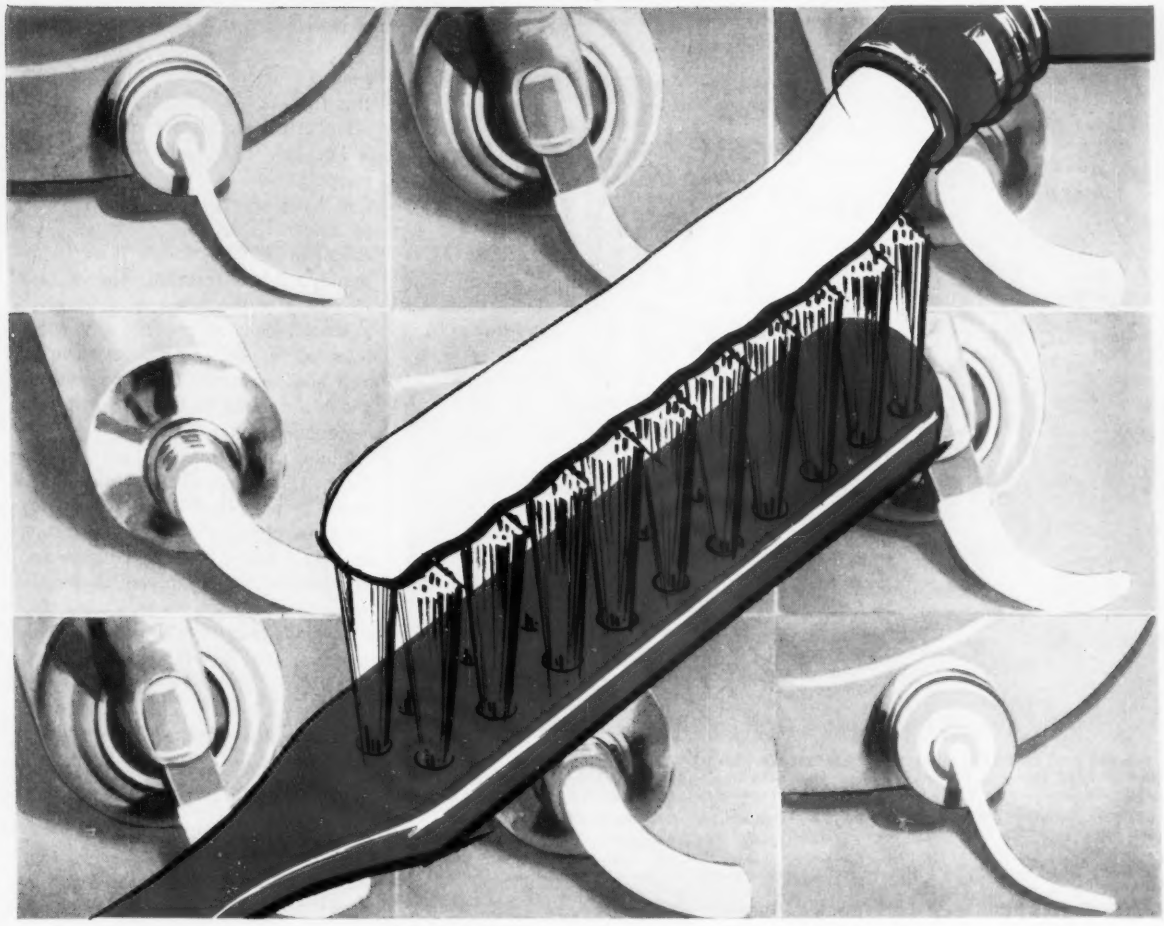
Tower Treatment: Fluor's new protective coating process—Permaclad Towercote—boasts the advantage of being equally as effective on the wet wood of in-service towers as it is on the dry wood of new installations. Key: a specially modified epoxy resin, developed jointly by Fluor and A. R. Moberg Laboratories, Inc. (Los Angeles).

Primary goal of tower protective coatings is the prevention of fungus rot. Tower manufacturers have long debated the merits of impregnating wooden components with chemical preservatives. Chief arguments against such treatment is the added cost of the operation and the questionable permanence of the impregnant. Pressure impregnation is also limited to new construction, could not be used on the cooling towers that are already in service.

Moberg tested hundreds of variations of modified epoxy formulations, finally hit on a combination of resins and special catalysts that form a continuous coating on wet wood. Only limitation: surface must be free of water film or droplets.

The recommended method of applying Permaclad Towercote to an existing installation is, first, to take one cell at a time off stream, hose it down with fresh water and allow it to drip dry for 1-3 hours. The cell is then spray-coated and allowed to dry for one hour before the second coat is applied. To permit proper hardening of the coating, cell should not be

*"Evaluated Weather Data for Heat Transfer Design," available after Dec. 1, '58, from Fluor Products Co., Department DEW, Whittier, Calif. Price: $35 per copy.



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Glycerine gives creamy body to toothpastes and other formulations. It permits them to flow freely through container openings of any shape, any size.

Why? Because Glycerine offers exceptionally good control of body and consistency . . . lubricates . . . prevents settling . . . resists hardening . . . prolongs product life throughout shipping, storage and use.

Glycerine offers you more than an unique balance of properties. It is stable in price, dependable in supply, compatible with most ingredients favored for pharmaceuticals and toilet goods. Its usefulness continues to grow. We'd like to send you our 18-page booklet: "Glycerine Properties and Uses." Address your request to the Glycerine Producers' Association.

Properties

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NONVOLATILITY • NONTOXICITY

TASTE • COMBINING WEIGHT

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placed back onstream for 4-5 hours. But the resin continues to cure even after operation is resumed.

For new construction, Fluor plans to apply the first coat on a production-line basis at its Santa Rosa, Calif., plant. This will ensure complete encasement of components prior to assembly. After erection, the outside sheathing of the tower may be given a second coat to prevent any possibility of leakage or seepage when the unit goes onstream. Cost of coating: about the same as that of pressure-impregnated pretreatment.

Fluor says extensive tests indicate the new coatings are virtually unaffected by prolonged exposure to many common chemicals, including strong acids and bases, organic solvents and conventional water-treating materials. From these results, it's estimated that a two-mil coating will protect cooling-tower lumber for 10-15 years. And by re-applying Permaclad Towercote, says Fluor, it may be possible to prolong the service life of a tower indefinitely.

PROCESSES

Fuel Cell: A fuel cell with an energy conversion efficiency of 70% has been developed by Lockheed Missile Systems division laboratories (Sunnyvale, Calif.). Other companies have developed cells with efficiencies ranging from 50-85% (*CW, Oct. 18, p. 62*). Lockheed has a 100-watt-hour/lb. cell under development, claims a 300-watt-hour/lb. cell can be made within five years (automobile batteries deliver 8-10 watt-hours/lb.).

•

Waste Disposal: Coors Porcelain Co. (Golden, Colo.) has developed ceramic sponges for disposal of the watery, radioactive waste from fuel reprocessing plants. Tests at the University of California's Los Alamos Scientific Laboratory show the sponges can absorb up to double their own weight in four cycles of alternate soaking and drying. Although the final volume is larger than that of the original waste, the variety of shapes in which the sponges can be made makes possible utilization of the trapped radioactive sources.

The highly porous clay sponges are first formed in any of several ways (including the use of burnout materials such as naphthalene, wood or

New from Dow

Five promising developmental chemicals

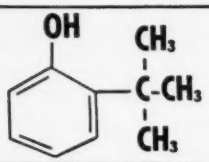
CHLOROACETALDEHYDE *Versatile chemical intermediate now commercially available*

$Cl-CH_2-CHO$

Chloroacetaldehyde, a very reactive compound, undergoes practically all of the typical aldehydic reactions. In addition to its reactive carbonyl group, chloroacetaldehyde also possesses a replaceable chlorine atom, offering many diverse possibilities.

Chloroacetaldehyde and many of its derivatives have been employed in the production of sulfonamides and investigated in other pharmaceutical applications. It is also of interest in the agricultural and plastics fields. Investigational samples and a copy of a Dow booklet on Chloroacetaldehyde are available.

o-tert-BUTYLPHENOL *Another new substituted phenol*



This compound exemplifies Dow's broad experience with substituted phenols—a group which includes brominated, chlorinated, hydrogenated, and alkylated-type products. A list of Dow substituted phenols is available upon request.

METHYLACETYLENE-PROPADIENE MIXTURE *Commercial quantities of a 70-30% mixture are immediately available*

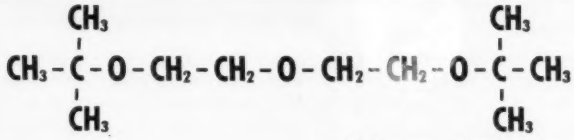
$CH_3-C\equiv CH$

$CH_2=C=CH_2$

Dow methylacetylene-propadiene mixture is the first acetylene homolog commercially available at an economical price. See physical properties of a typical 70-30% mixture, right. A new bulletin and experimental samples are also available.

Molecular weight	40.062
Boiling point, 760 mm. Hg, °C.	−23
Freezing point, °C.	−110
Density, 15.5 °C.	0.618
Critical pressure, lb./sq. in.	855
Critical temperature, °C.	128.0
Color	colorless and clear

DIETHYLENE GLYCOL DI-tert-BUTYL ETHER

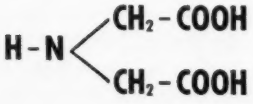


Chemical inertness and high solvency make this compound an ideal solvent and reaction medium

This new solvent joins many other versatile glycol ethers in the Dow family. At this time you are invited to experiment with this interesting compound.

Immediately available in developmental quantities, its characteristics may hold the answer to your solvent problem.

IMINODIACETIC ACID *Highly reactive, useful intermediate for surface active agents, complex salts, chelating agents*



Developmental quantities of this highly reactive organic chemical are immediately available. Preliminary investigation indicates widespread use as an intermediate in the manufacture of surface active agents, complex salts and chelating agents.

PHYSICAL PROPERTIES

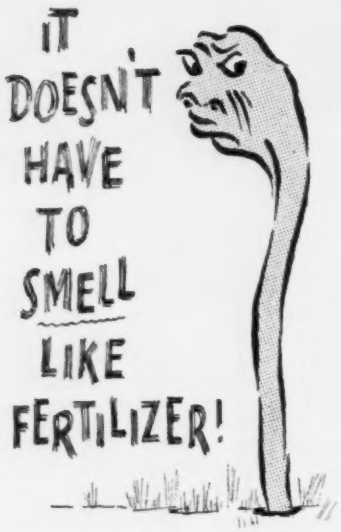
Description	white crystalline solid
Molecular weight	133.10
Melting point, °C.	220-250 (melts with decomposition)

SOLUBILITY, gms/100 gms/solvent

Water at 5 °C.	2.43
Acetone	insoluble
Ether	insoluble
Methanol	insoluble
Benzene	insoluble
Carbon Tetrachloride	insoluble
n-Heptane	insoluble

Many new Dow products available in sample quantities are included in our recent catalog, "Research Chemicals from Dow." This catalog is available upon request as are samples of the chemicals described in this advertisement. Contact THE DOW CHEMICAL COMPANY, Midland, Michigan, Technical Service & Development 1306F.

YOU CAN DEPEND ON DOW



EYEGLASSES come in multicolors and shapes; medicines taste like peppermint; band-aids are available in decorator designs; and entire sewage systems are scented for the community's comfort. Creative manufacturers are, daily, turning similar product liabilities into positive assets, and profiting greatly for their initiative. To most *commercial greenhouses, home gardeners, indoor plant fanciers and private lawn custodians* the natural odor of fertilizer is a liability . . . and a big one! But . . . it doesn't have to be! In the D&O Industrial Odorant Labs, masking and reodorizing compounds have been developed for all types of commercial fertilizer, including those based on *urea, fish solubles, activated sludge, dried bone meal, animal manure, tankage, meat scraps and phosphate.* Turn your product liability into a profit-increasing asset by means of a tailor-made fertilizer reodorant from D&O. Write for specific details . . . today!

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ENGINEERING

cork; gas bubbles with foaming agents; and highly absorptive materials such as calcined clays and diatomaceous earth). They're then fired at 800 C.

A sponge so made can be alternately soaked in the radioactive waste liquid and dried. In each of the first four cycles, the sponge takes up about 50% of its original weight, with the percentage dropping after the fourth cycle. Finally, the waste is chemically locked in by a second firing, this one at 1300 C.

Cost of the system hasn't been determined, but it is estimated to be no more than that of storing liquid wastes—and storage of solids is considered less hazardous.

EQUIPMENT

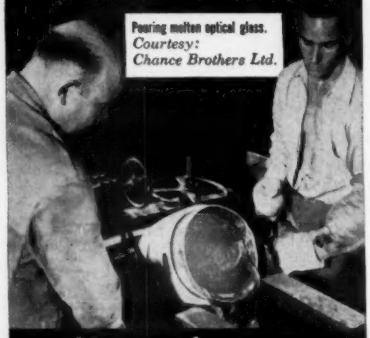
Computer Control: Computer-controlled cement processing will get under way next spring at Riverside Cement Co., a division of American Cement Corp. (Oro Grande, Calif.). Following joint engineering studies by Riverside and Thompson Ramo Wooldridge Products Co. (*CW Technology Newsletter, Nov. 15*), the company purchased an RW-300 digital control computer as the first step toward complete automation of its 5-million-bbl./year Oro Grande plant.

Initially, the computer will keep track of quantities, chemical compositions and point of origin of rock and other raw materials. With this information, it can guide operation of a completely mechanized blending facility now being installed at the plant. Computation of blending operations will take into account such economic factors as hauling distances and cost of quarrying in various areas. The computer will also log and analyze data from rotary kilns to aid in planning wider use of automatic control.

•

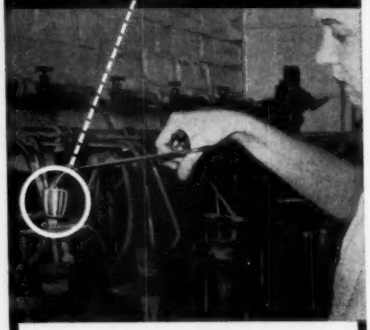
High-Purity Nitrogen: Linde's molecular sieves are the heart of a new method for producing 99.99% pure nitrogen, developed by Lindberg Engineering Co. (2450 W. Hubbard St., Chicago 12) and called the HYNI process. Lindberg offers the process in a packaged nitrogen generator unit which burns a mixture of air and natural or manufactured gas. After initial drying by condensation, molecular sieves remove remaining water vapor and carbon dioxide.

BISHOP
HAS THE LARGEST SELECTION OF PLATINUM CRUCIBLES



. . . big ones for processes

. . . small ones for labs



Next time you need platinum crucibles—to any specifications—or any other precious metal apparatus, investigate the Bishop line. You'll find a complete selection of crucibles, dishes, electrodes, gauze, thermocouple and furnace winding wire. And highest quality, naturally. Bishop has supplied America's chemists since 1842.

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PLATINUM WORKS
MALVERN, PA.

Speed new product marketing... cut capital outlay

Use Eastman's Custom Processing Plan for commercial-scale organic reactions

Eastman is performing a wide range of commercial organic reactions on a contract basis for companies seeking to postpone or avoid new capital investment or time-consuming process development. Some of the products are intermediates for further processing by the contracting company. Some are finished chemicals ready for marketing.

If your present or future plans include reactions in those fields of organic chemistry represented in the accompanying table, write or call our Custom Processing Department for specific information. By taking advantage of Eastman's specialized equipment and extensive experience in carrying out such reactions on a commercial basis you can—

1. avoid tying up capital in costly, special-purpose, or infrequently-used equipment.
2. speed the commercial manufacture of new products.
3. save on engineering design and process development costs.
4. avoid handling certain unstable or hazardous reactants.

These reactions represent those fields of aliphatic organic chemistry in which Eastman is particularly qualified. Numerous aromatic reactions, including reductive alkylation, amination, reactions of anthraquinone derivatives, Fries rearrangement, positional nitration and nitrosation, are also performed on a contract basis.

Acetylations—of alcohols or amines with acetic acid, acetic anhydride or ketene to give such compounds as esters, amides and anilides. The use of acetic anhydride and ketene have been found particularly useful with heat-sensitive compounds.

Aldol Type Condensations—with aldehydes, ketones, or both, to produce such compounds as acetaldol, butyraldol, diacetone alcohol and 2,2-bis (hydroxymethyl) butyraldehyde (trimethylolpropane intermediate).

Anhydride Formation—of symmetrical or mixed anhydrides by reaction of acetic anhydride with various organic acids.

Dehydrations—of aldols and ketols, catalytically or thermally, to yield such compounds as crotonaldehyde, mesityl oxide and isobutylidene acetone.

Dehydrogenations—of primary or secondary alcohols in liquid or vapor phase reactions to give, as examples: acetaldehyde, propionaldehyde, acetone, methyl ethyl ketone, and methyl hexyl ketone.

Esterifications—of solids or liquids, saturated and unsaturated, mono- or polyhydric alcohols, and mono- or polybasic acids have been esterfied.

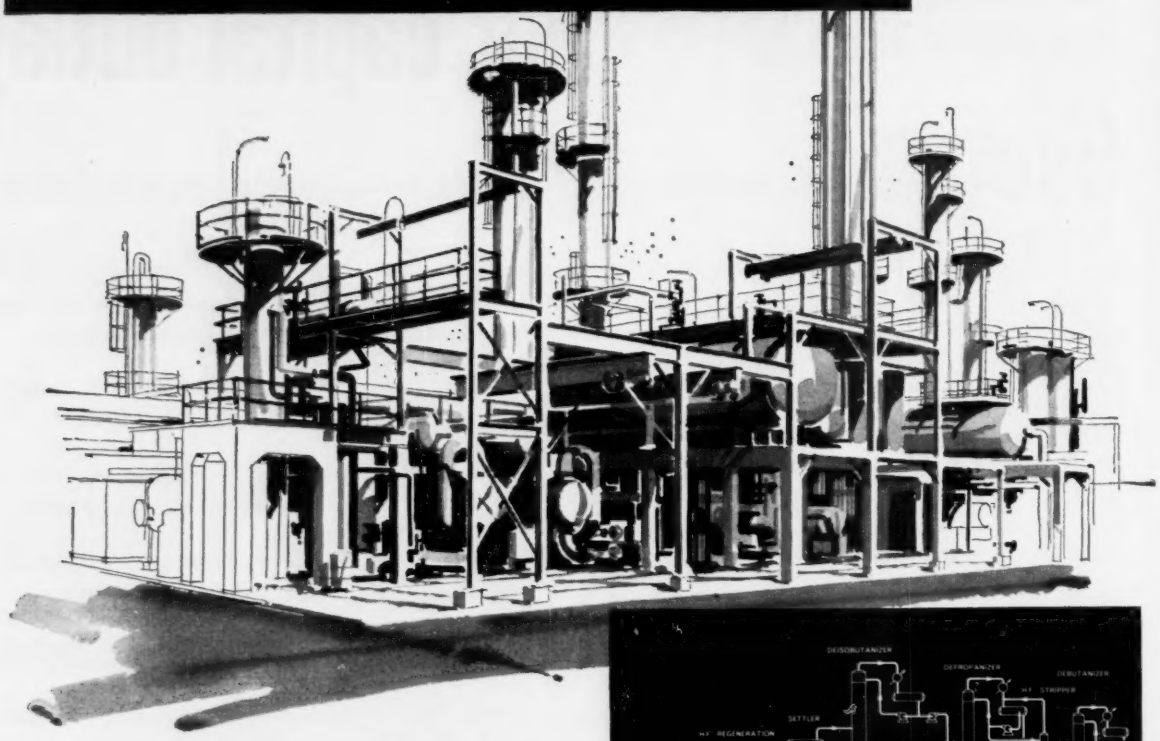
Hydrogenations—up to 2000 p.s.i.g. and 250°C. with various catalysts. Partial, selective hydrogenations of unsaturated aldehydes to saturated aldehydes such as 2-ethylhexenal to 2-ethylhexanal, and crotonaldehyde to butyraldehyde, have been carried out, along with experimental work on reducing the aldehyde group without hydrogenating the double bond, to give such compounds as allyl and crotyl alcohols. Complete reductions of aldehydes and unsaturated compounds have also been carried out to make butyl alcohol, 2-ethylhexanol, and isocaproic acid from 4-methylpentenoic acid. Hydrogenations are also valuable in upgrading materials with undesirable unsaturation or color.

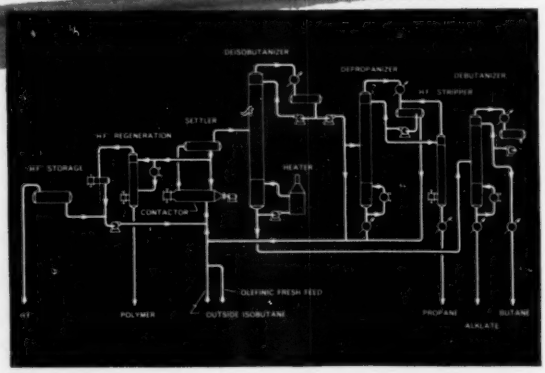
Oxidations—of saturated and unsaturated aldehydes, alcohols and aromatic compounds catalytically with air to give acids containing no inorganic products other than catalysts. Examples of this type of reaction are the preparation of acetic, butyric, 2-ethylhexanoic, crotonic, benzoic, toluic and phthalic acids.

Custom Processing Department, Chemicals Division **Eastman** CHEMICAL PRODUCTS, INC.

subsidiary of Eastman Kodak Company, KINGSPORT, TENNESSEE

HF Alkylation





Makes Alkylate, Top Anti-Rumble Motor Fuel

A practical, economical means of producing motor alkylate, a high octane, top quality gasoline blending component, is available to petroleum refiners through the UOP "HF" Alkylation process.

"HF" Alkylation is a catalytic process which combines olefins such as propylene, butylenes and amylenes with isoparaffin (usually isobutane) to form a mixture of branched chain hydrocarbons of higher molecular weight known as alkylate. "HF" Alkylation is also widely used for producing high octane aviation gasoline.

Motor alkylate, an isoparaffin fuel component, burns with a minimum of carbon deposits even in today's modern high compression automobile engines and thus greatly reduces surface ignition and its consequent "rumble."

Another method for producing alkylate is also available to refiners through UOP. It is similar to the "HF" method but uses sulfuric acid as the catalyst. This process is licensed by Universal Oil Products Company under their own patent rights and the patent rights of Shell Oil Company, The Texas Company, The British Petroleum Company, Limited and Standard Oil Company of New Jersey.

These processes for producing alkylate afford further evidence of UOP's policy of providing the refining industry with every means for a well-rounded, profitable manufacturing operation.

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More Than Forty Years Of Leadership In Petroleum Refining Technology

Import wall, sought by Canada's basic-chemical manufacturers, could block chances of specialties sellers.

Tariff Troubles Mark CMCS Launching

Last week, some 200 delegates representing 71 member companies traveled to Montreal for the first official meeting of the Canadian Chemical Specialties Manufacturers Assn.

Two complications had to be faced at that initial session. First order of business was to put the CCSMA out of business—at least under that name. A conflict with an older, but inactive, group necessitated a change of title to the now-official tag, Canadian Manufacturers of Chemical Specialties Assn. But under its new name, the organization is still patterned after the 41-year old U.S. Chemical Specialties Manufacturers Assn. and, like it, is divided into six major divisions: Aerosol; Automotive; Disinfectants & Sanitizers; Pesticides; Soaps and Detergents: Waxes & Floor Finishes.

Tariff Trouble: Perhaps the more pressing issue at the new organization's meetings concerned the stand to be taken on the upcoming chemical hearing before the Canadian Tariff Board. The conflict, some specialty makers told *CW*, hinges on the fear of small manufacturers that any change in import duties will not benefit the relatively small specialty makers but the "big boys" who turn out the basic materials. Though most specialty makers think that a revision is needed in the country's tariff structure, they're apparently afraid of a blanket recommendation which, in simplifying things for the government, will complicate things for industry. The specialties group essentially desires to be able to import its needs freely.

While a committee made up of representatives of 12 Canadian chemical companies is still working on recommendations to present before the Tariff Board next Spring, and while an effort is being made to go before that board; it is plain that the group has not yet settled upon a course of action.

To look after the interests of the specialties manufacturers, the CMCS has retained William Ferguson, formerly Traffic Manager of Colgate-Palmolive's Toronto plant, to work with the organization's Traffic Committee in recommending measures to the Tariff Board.

In presenting recommendations before Canada's Tariff Board one area of disagreement is expected to come from a difference of opinion between primary and secondary chemical makers over a proposed 20% tariff rate on some insecticides which now arrive duty free in bulk quantities. If this 20% rate were to go into effect, it would force some insecticide makers to go out of business.

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Whatever your industry, whatever your need in stearates, you will fill them best—fill them fast—through Metasap. Write for full information about our full line of metallic soaps. Our Technical Service Department will gladly make recommendations based upon your specific requests. Metasap Chemical Company, Harrison, N.J.

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SPECIALTIES

Also hitting the insecticide makers hard, were it to go on the tariff schedule as proposed, is a 20% rate on tin cans and aerosol containers. Soap manufacturers told *CW* that they are ready to agree on a hike in duty on certain chemicals only if such action would lead to development of producers of these materials in Canada and not otherwise.

Whatever the specialty people decide, their recommendations are sure to be listened to with close attention. Estimated size of the Canadian chemical specialties industry output is a lusty $½ billion/year.

Where both primary producers and specialty makers are in complete accord is in the adoption of the Brussels Nomenclature—a systematic grouping and naming of goods handled in international trade—as the framework upon which tariff rates would be applied. Germany, France, Italy, Austria, Belgian Congo and Surinam are now using this system and many other countries, including Great Britain, Brazil and Columbia, will use it in the future.

The CMCS elected as its first president, George E. Flemming, (Guardian Chemical and Equipment Co., Montreal). Others elected include: vice-presidents, G. H. Wood and R. L.

Nabbing False Alarmers Green Handed

When New York Fire Commissioner Edward F. Cavanagh, Jr. (*far right*) decided to crack down on false fire alarms last week, specialty maker William Cooper (*in lab coat*) was on hand with a phosphorescent dye. Here Cooper, president of Black Light Eastern Corp. (Long Island City, N. Y.), is applying his phosphorescent paste, which he claims contains lanolin and a zinc compound that glows green when examined under a black-light source.

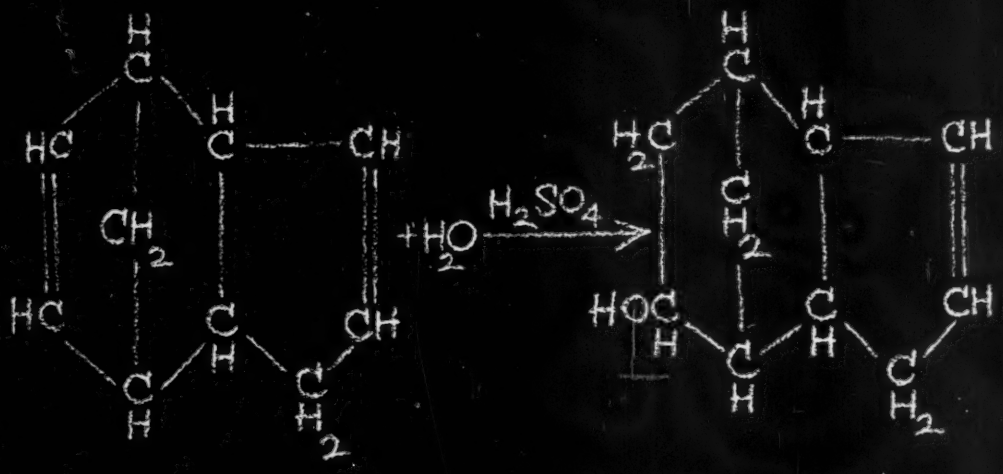
Cooper says his dye remains effective on alarm boxes up to six months, remains on persons' hands and clothing up to 30 days. A one-ounce jar can coat up to 50 boxes, costs $1.75.

Cooper's material won't be used on all New York's 14,000 fire-alarm boxes—just on those in troublesome areas. New York firemen receive upwards of 12,000 false alarms each year, but only about 200 persons are arrested.

Cooper says his dye is now used by 75 U. S. fire departments. He expects New York City to be his big breakthrough.

ANOTHER NOVEL USE FOR A FAMILIAR PETROCHEMICAL

ONE OF A SERIES



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In the presence of dilute sulfuric acid, water adds to Dicyclopentadiene to form a secondary alcohol. Also in analogous manner this petrochemical will react with alcohols and phenols to form ether derivatives, with mercaptans, halogen acids, and with various carboxylic acids to form esters.

Have you tried high purity Dicyclopentadiene for use in the production of metallic derivatives?

Call on Enjay for high purity Dicyclopentadiene. You'll find Enjay is your best source for a dependable supply of this high quality product in *any quantity* you require. The Enjay Company offers a complete line of petrochemicals for industrial use.

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FOR COMPLETE INFORMATION on specifications and characteristics of Dicyclopentadiene and many other high quality petrochemicals contact the nearest Enjay office. Shipments will be made from conveniently located distribution points in tank car, truck or 55 gal. drum quantities.

Jones; secretary, A. Robins, and treasurer, C. S. Lange.

There will be an annual meeting for the whole group, with quarterly meetings scheduled for the 12-man Board of Directors. Next general meeting will be in November, '59 at the Royal York Hotel in Toronto.

Prognosis: Hopeful

The American Medical Assn.'s proposed labeling law will be rewritten in a form more acceptable to chemical specialty makers.

After meeting with several trade associations in Cleveland recently to discuss the AMA's labeling recommendations, the head of the AMA Committee on Toxicity, Dr. Bernard Conley, told *CW*, "When we came face to face in top-level conferences, we found that we were more in agreement than disagreement. By exploring these things across a conference table with all the issues bared, we found that, although the approach may be a little different, the basic thoughts are the same."

As rewritten, the AMA's proposed labeling law more closely resembles the CSMA's own proposal (which came out in October 1957) than it does the original AMA recommendations. One area still in conflict: definition of the word poison. CSMA is still in favor of the skull-and-crossbones warning; AMA wants to spell out toxicity within specifically defined limits.

There had been some feeling on the part of specialty makers that the AMA was trying to bypass them and use its influence in sending the AMA's proposed laws out as something to be accepted *ex cathedra*. Now the CSMA will probably get together with the AMA in presenting the rewritten law as a joint effort. Though both parties would like to see the revised labeling law enacted as federal legislation, chances are that the Council of State Governments—a group made up of governors and attorney generals of all states—will be first to act on the new bill. If it's given a green light there, Federal legislation should follow soon after.

Still up in the air are three labeling laws still holed up in Congressional committees: the look-alike Williams and Curtis proposals in the House, and the somewhat different Bush bill in the Senate. How the revised AMA bill will affect their future is still conjectural, but the AMA's professional weight may well relegate them to quiet death.

PRODUCTS

New Wrinkle for Metals: Union Carbide Chemicals Co. has a new vinyl wrinkle finish for metals. The new finish is made by incorporating a compound, called Monomer MG-1, into vinyl plastisol, organosol, or solution coating formulations. It's expected to find wide use as a finish on typewriters, electric equipment, office equipment, automobile heaters and home air-conditioners. Carbide says its new finish is tough and scratch-resistant.

•

Bug-Free Plastics: Puratize Inc., subsidiary of Gallowhur Chemical Corp. (Ossining, New York), has just developed a process to make plastics bacteriostatic. It plans to license the process to producers of molding compounds as well as to molders, themselves.

Biggest market for the new development is expected to be in the production of garbage cans, bathroom fixtures and floor tiling. According to Puratize, each bacteriostat is designed to be compatible with the base resin (phenolics, polystyrene, polyethylene, melamine), and to be stable at molding temperatures.

•

Dry Feet: Dow Corning Corp. (Midland) has just introduced its silicone water repellent for leather in an aerosol container. Dow Corning says that an 8-ounce can of its new product, called Shoe Saver Spray, will weatherproof 5-10 pairs of shoes. Price: $1.59.

•

Polyester Plasticizers: Two new polyester plasticizers are now available from Allied Chemical Corp., Plastics and Coal Chemicals Division. Called Elastic 37-R and Elastic 36-R, the new compounds are said to work well as primary agents or in blends with monomeric plasticizers.

•

Industrial Adhesives: The Pacific Glue Manufacturing Co. (Seattle, Wash.) will build a second plant at Vancouver, Wash., to produce industrial adhesives used in the paper industry. The new plant will serve the Portland-Vancouver area.

Going South?

Doing business in the South?

Selling products in the South?

Considering a new plant in the South?

or

Just watching developments in the South?

NEW SILHOUETTE ON THE SOUTHERN HORIZON!

Can you benefit from this new Wyandotte source for vital chemicals?

Strange shapes, newly outlined against the Louisiana sky, mark an important new source of vital chemicals—a modern facility incorporating the latest in chemical and engineering technology. Wyandotte's new Geismar Works, immediately south of Baton Rouge, is on stream!

These newly constructed facilities include a 60-million-pounds-a-year ethylene oxide-glycol unit . . . will have a chlorine-caustic soda plant with a daily capacity of 300 tons of chlorine, 330 tons of caustic. Also on this 1200-acre site, ample room is available for Wyandotte's future requirements, as well as for neighboring plants of other companies which may be built for "over-the-fence" use of our basic products.

This new plant, added to our existing facilities on the Great Lakes, and our strategic storage points at Chicago and at Bayonne, New Jersey, greatly expands the shipping area that Wyandotte can effectively serve. This is in keeping with our policy of enlarging and diversifying our services to an ever-increasing number of industries.

Expansion is going on at Wyandotte, Michigan, too. Here, a new oxide products plant and a propylene oxide plant have just been completed. The oxide products plant will use ethylene oxide and propylene oxide in the manufacture of many structurally different Wyandotte polyoxyalkylene glycol polymers.

What better way is there for a 68-year young chemical company, dedicated to continuing product growth and geographical expansion, to express confidence in the future of the chemical industry? Of all industry?

May we serve you . . . soon? *Wyandotte Chemicals Corporation, Wyandotte, Michigan. Offices in principal cities.*

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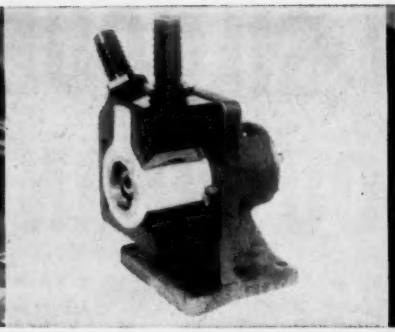
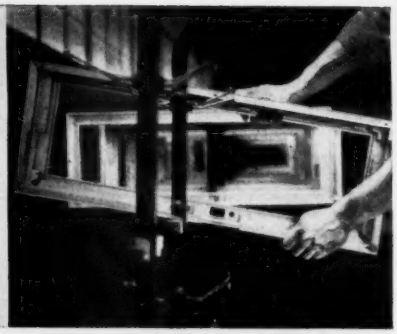
GLYCOLS • SYNTHETIC DETERGENTS (anionic and nonionic) • CARBOSE® (Sodium CMC) • ETHYLENE OXIDE • ETHYLENE DICHLORIDE • PROPYLENE OXIDE • PROPYLENE
DICHLORIDE • POLYPROPYLENE GLYCOL • DICHLORODIMETHYLHYDANTOIN • CHLORINATED SOLVENTS • OTHER ORGANIC AND INORGANIC CHEMICALS

1 CUTS TOOLING COST. 3M Brand Tooling Compound 112 effects great economies in making vacuum-forming molds at Plastics, Inc. Similar savings are found in making core boxes and driers of huge dimensions. The two-component compound wastes no material. Pre-forms are made with catalyst-coated particles, then soaked in resin.

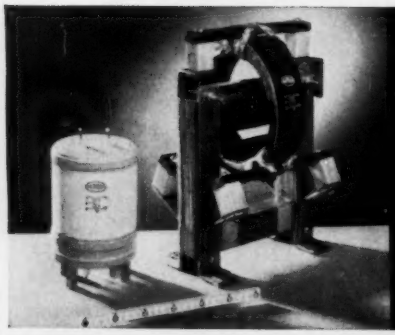


2 PROTECTS HEART OF PUMP. A KEL-F® Elastomer liner is used in Vanton Pump and Equipment's Flex-i-liner pumps. The halofluorocarbon's heat resistance protects against highly corrosive chemicals. One pump handling red fuming nitric acid ran for 14,700,000 flex cycles without noticeable swelling or corrosion.



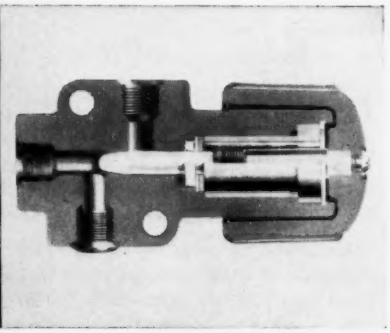
3 COATS ANODIZING RACKS. KEL-F® Elastomer is used by Automotive Rubber Company, Inc., as the base for the protective coating of these anodizing racks. The coating survives a 400-hr. nitric acid immersion with no breakdown! Amazing resistance to corrosives and great thermal stability.

3M CHEMICALS BRING TO 15 INDUSTRIES! EFFECT

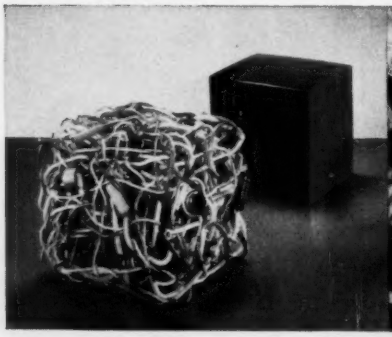


4 AID MINIATURIZATION. 3M Fluorochemical Inert Fluids, used as coolants in these Raytheon, Inc., transformers, reduce size and weight as much as 75% without power loss. Smaller coils can be used, less outside insulation space required. The fluids are thermally stable, dielectrically strong.

5 CUTS PROTOTYPE COST 95%. 3M Brand Tooling Compound 113 was used instead of a steel die for this Spartan Manufacturing Company prototype. Took only 5 hours to make, instead of 200. With this unique two-part system, combined labor-and-material cost totaled $27 instead of $660—a more-than-95% savings.

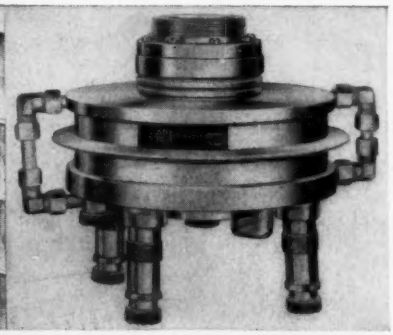


6 MAKES VALVE MORE DURABLE. A KEL-F® Plastic needle helps maintain the sealing effect of Chemtrol's PVC valves. The halofluorocarbon plastic resists destructive galling, pitting, and friction. Resistance to deposit build-ups also helps maintain flow controls in metering chemicals.

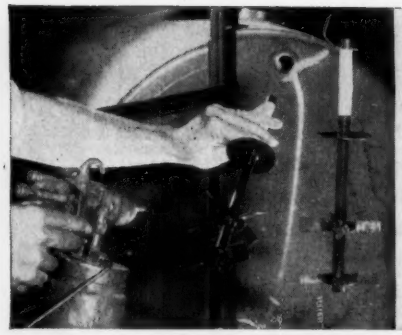


7 FLEXIBILIZES EPOXY RESINS to any degree needed. Unusually low viscosity of CARDOLITE® NC-513 assists encapsulation of the most complex electrical parts. Effects easier flow of epoxies, aids resin penetration, cuts risk of air entrapment. Excellent electrical properties, chemical stability, age resistance.

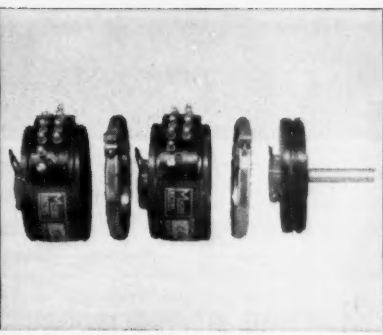
8 LENGTHENS LIFE OF WALL COATING. 3M's CARDOLITE® NC-513 flexibilizes Steelcote's plastic WALL NU. It adds impact strength, maintains flexibility indefinitely, provides greater adhesion, excellent heat stability. And, unlike other flexibilizers, it won't weaken the plastic's chemical and solvent resistance.



9 COOLS TUBE. 3M Fluorochemical Inert Fluid FC 75 was chosen by RCA as the best practical low-temperature coolant for this developmental high-power transmitting tube. FC 75 permits essentially the same power output at temperatures below 0°C. as that obtained with water cooling *above* 0°C.



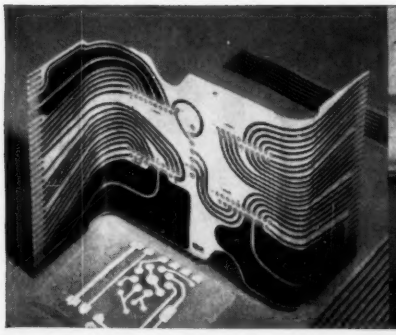
10 **COAT CHEMICAL AGITATORS.** KEL-F® Dispersion Coatings, unlike competitive materials, can be sprayed on agitators by Industrial Coatings Corporation. They are 5 to 8 times more corrosion-resistant than conventional coatings. These anti-sticking halofluorocarbon coatings are also easy to clean.



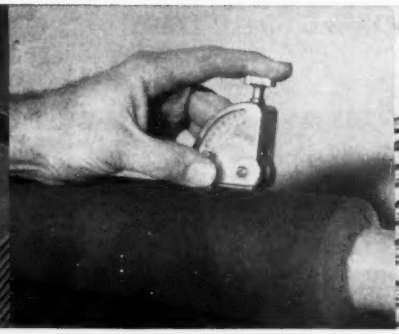
11 **CUTS POTENTIOMETER COMPONENTS COST 50%.** The plastic clamp and wiper of Micro-Lectric's potentiometer are made of KEL-F® Halofluorocarbon Plastic. They need no silver or cadmium plating, no phenolic insulators. Results: lower costs, better dielectric strength, less inertia, lighter weight.

12 **MAKES CONTAINERBOARD REPEL OIL.** "SCOTCHGARD" Brand Paper Size treated cartons are used by Chicago Rawhide Manufacturing Company for packing and shipping oily machine parts. Results? No more slippery, hard-to-handle surfaces; no box deterioration; no oil stains. Plus speedier production.

UNIQUE NEW BENEFITS
ECONOMIES! IMPROVE PRODUCTS!



13 **PROTECTS PRINTED CIRCUITS.** Sanders Associates, Inc., laminate their Flexprint printed circuits between KEL-F® Plastic or print them in KEL-F Conductive Ink on KEL-F Plastic film. These 3M Halofluorocarbons perform from −320°F. to +392°F. . . . have great dielectric or mechanical strength, flexibility, chemical stability.



14 **PLASTICIZES PRINTING ROLLERS.** TURPOL® NC-1200 was the only one of 112 plasticizers that properly retained the dimensional stability of Ideal Roller & Manufacturing Company's synthetic rubber rollers for close tolerance work. This nontoxic chemical softens the rollers, does not leach out in oils or solvents.

15 **PRIMES METAL.** Gutters and downspouts on this home were primed with 3M Brand Primer Concentrate HC-911. Only one topcoat was applied. Four years later, the topcoat showed no blistering or flaking. HC-911 Primer is a unique new product that adheres easily to brand-new galvanized sheet metal—dries in minutes.

3M COMPANY CHEMICALS *3M Chemicals opening new worlds of use for products and processes*

CHEMICAL DIVISION

MINNESOTA MINING AND MANUFACTURING COMPANY

3M COMPANY

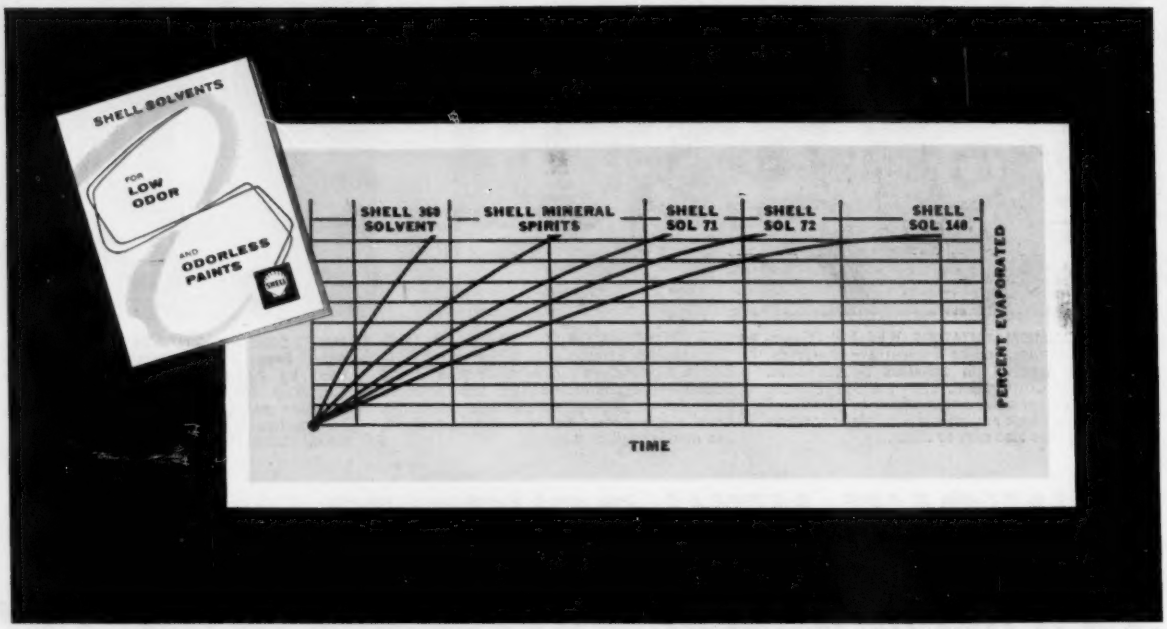
. . . WHERE RESEARCH IS THE KEY TO TOMORROW

Minnesota Mining and Manufacturing Company
Chemical Products Group
Department WE-118, 900 Bush Avenue, St. Paul 6, Minnesota

Sirs:
I would like further information on the applications of 3M products, reported on in this advertisement, bearing the following numbers:

In addition, I would like information on the application of 3M products in these fields:

My Name
Title
Company
Address
City State



Typical properties of these Shell Solvents are contained in booklet shown. It will be mailed on request.

Where odor is a problem use these

SHELL SOLVENTS

SHELL SOL 71 AND 72

. . . have no odor, are ideal for interior finishes, polishes and cleaners. Shell Sol 71 offers slightly faster evaporation.

SHELL SOL 360

. . . much faster evaporation than mineral spirits, low odor, over 100° F. flash point.

SHELL SOL 140

. . . a high-flash, slower drying solvent with unusually low odor.

SHELL MINERAL SPIRITS

. . . traditional distillation range, solvent power and drying. Mild odor.

These solvents are recommended for low odor and odorless products.

SHELL OIL COMPANY

50 WEST 50TH STREET, NEW YORK 20, NEW YORK

100 BUSH STREET, SAN FRANCISCO 6, CALIFORNIA

SHELL

Technology Newsletter

CHEMICAL WEEK
November 29, 1958

Competition is shaping up in molecular sieves. Don't be surprised if W. R. Grace's Davison Chemical Division soon offers new products similar to Linde Co.'s (division of Union Carbide) molecular sieves. Selling price may be pegged below that of molecular sieves. Davison has no official comment.

For its part, Linde feels it has a strong patent position with basic patents (several of which are due to issue soon in the U.S.) covering methods of manufacture, composition of matter (they're basically artificial zeolites with highly uniform and controllable physical characteristics) and application techniques.

•

The first privately owned heavy-water reactor to go critical was shown off for the first time last week at the NDA-Pawling Laboratories of Nuclear Development Corp. of America (White Plains, N. Y.). Dubbed the PRR (for Pawling Research Reactor), the unit is the prototype for a training and research reactor (TRR) that NDA plans to produce for universities and industrial training programs. The new unit is the only critical experiment at the Pawling site, will supply basic data for the design of commercial heavy-water reactors currently being developed by NDA.

•

A combination tranquilizer-muscle relaxant is a new product of Winthrop Laboratories (New York). Winthrop calls the newcomer Trancopal. Chemically it is 2-(4-chlorophenyl)-3-methyl-4-metathiazanone-1-dioxide. Synthesized and tested at Sterling-Winthrop Research Institute, Trancopal is said to be as effective as meprobamate (Milltown) but with fewer side effects. Unrelated, chemically, to other muscle relaxants now in use, the new drug is said to be more effective and better tolerated than the former.

•

Another iodide route to high-purity thorium is being developed by Australia's Commonwealth Scientific & Industrial Research Organization. The switch: starting material is relatively cheap thorium carbide rather than reactor-grade thorium metal chips, as used by Metal Hydrides (*CW, July 13, '57, p. 27*). CSIRO says use of the carbide feed results in even smaller amounts of carbon, oxygen and nitrogen in the product than "in the best material obtained from a metal feed."

•

Ultraviolet lamps to produce negative ions in the air are getting research at Westinghouse's lamp division research laboratories (Bloomfield, N.J.). The theory is that the negative ions are an aid to health. Positive air ions reportedly cause physical discomfort (e.g., fatigue), also adversely affect sufferers from rheumatism and some other ailments.

•

Linde Co. last week disclosed a new "super" insulation that it calls "a major scientific breakthrough in cryogenics." The material, de-

veloped at the company Tonawanda, N.Y., labs, is reported to be 26 times more efficient than standard vacuum insulators. It eliminates the need for nitrogen coolant in liquid hydrogen and liquid helium storage containers.

Details of the new insulating system have not been revealed. An entirely new cryogenic concept is reportedly involved. The key may be a combination of vacuum insulation and a new flake-like insulating material. The super insulation has been in use only a few months, is now available only in equipment manufactured by Linde.

Besides industrial applications, uses for the new insulation are foreseen in missile fuel-storage facilities that will hold liquid oxygen for months, or even years, with practically no loss.

•

New competition for dioctyl sodium sulfosuccinate, the leader in wetting agents, has been developed by Process Chemicals Co. (Los Nietos, Calif.). The new product is a nonionic ethylene oxide adduct of an aliphatic alcohol. The material—tradenamed Pronon 505—sells for 35¢/lb., about one-third the price of dioctyl sodium sulfosuccinate.

•

American Cyanamid hasn't found a centralized research program quite suited to its corporate objectives. Cyanamid, which consolidated its research into a central division in Jan. '56, told *CW* this week that it will move toward decentralization on Dec. 1. Object, the company says, is to combine the advantages of both approaches and to "logically permit future expansion of Cyanamid's research activities in future years."

Lederle Laboratories (Pearl River, N.Y.) and the agricultural and organic chemicals divisions will take over their own product research and process development responsibilities from the central research division (Stamford, Conn.). The research laboratories at Bound Brook, N.J., will be operated by the organic chemicals division.

"For the present," says Cyanamid, "the central research division will continue to serve other operating divisions until they have completed arrangements to assume responsibilities for their own research activities."

•

Extra-durable, low-density leather can be made by a new process developed by the Leather Industries Research Institute (Johannesburg), a branch of the South African Council for Scientific and Industrial Research. According to a just-granted provisional patent, the leather is freeze-dried, resulting in a material having a density as low as 25% of normal tanned leather. Its open structure is said to lend itself to impregnation with synthetic resins, rubbers and waxes. A pilot unit now under construction will help explore the new leather's commercial possibilities.

Versatile vinyl plastisols...

These duct sections of a fume exhaust system are covered with a non-porous plastisol coating that withstands wear and abrasion as well as entrained sulfuric acid, hydrogen sulfide, and carbon disulfide fumes.

one coat protection up to 1/4-inch thick!

There's more to this coating than the fact that it's chemical-resistant. It's also tough, resilient, and *thick*. Corrosive agents don't even get *near* the surface it protects!

With this plastisol based on BAKELITE Brand Vinyl Dispersion Resins, you can protect equipment, parts, and products against chemical attack. It forms a continuous, pore-free sheath over seams, undercuts, and crevices, as well as flat surfaces. And it's resistant to abrasion and wear besides.

Hard to apply? Not at all. Plastisols made from BAKELITE Brand Vinyl Dispersion Resins are formulated for spraying or dip-coating to the thickness you want. A short bake fuses them. Learn more about the protection of plastisols. Write Dept. KA-38L, Union Carbide Plastics Company, Division of Union Carbide Corporation, 30 East 42nd Street, New York 17, N. Y. *In Canada:* Bakelite Company, Division of Union Carbide Canada Limited, Toronto 7.

BAKELITE COMPANY
has a new name...
UNION CARBIDE PLASTICS COMPANY
DIVISION OF UNION CARBIDE CORPORATION

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SAFE!

General American terminal keeps alcohol under "lock and key"!

Ethyl alcohol is a "problem" liquid when it comes to storage because close Federal tax supervision holds producers accountable for every gallon. A major producer who stores alcohol in General American's Carteret terminal doesn't have this problem—General American assumes it for him.

In addition to storage, the terminal provides a variety of services—metering, blending, diluting, denaturing and packaging—all provided with the necessary accountability and accuracy that solves a difficult marketing problem.

If you have a storage problem involving hard-to-handle liquids, call on General American. Leased terminal facilities give you the privacy, safety, flexibility and service of your own terminal—*without capital investment on your part.* Phone or write today. You'll find . . . *it pays to plan with General American.*

Six terminals at five key-market locations with over 14,000,000 barrels capacity: PORT OF NEW YORK (Carteret, N. J.), PORT OF NEW ORLEANS (Good Hope, La.), CHICAGO, ILLINOIS (Bedford Park), PORT OF HOUSTON (Galena Park and Pasadena, Texas), CORPUS CHRISTI, TEXAS.

TANK STORAGE TERMINALS GENERAL AMERICAN TRADE MARK

GENERAL AMERICAN TANK STORAGE TERMINALS
a division of GENERAL AMERICAN TRANSPORTATION CORPORATION
135 South La Salle Street • Chicago 90, Illinois

CW PHOTOS—MERRILL PALMER

Hospitality suites provide a chance to renew old acquaintanceships in a quiet, friendly atmosphere.

Hospitality Turns Show Time to Sales Time

Each day in Chicago last week, between the hours of 3 to 5 p.m., small groups of key salesmen quietly disengaged themselves from the milling crowds at the Eighth National Plastics Exposition, headed swiftly toward their company's hospitality suites.

They were charged with the subtle but all-important responsibility of giving the suites a relaxed, away-from-the-scene air, one that might lead to sales. On them, in short, rested much of the burden of making a company's show ventures pay off.

What represents effective show and suite coverage? What are the problems in setting up and staffing booths and suites? What makes a good show salesman? *CW* posed these questions and others to companies using the show. Here are their answers:

Early Start: For most chemical firms, advance planning starts nine months to one year ahead of the show's date. Lecture programs are carefully scrutinized to determine their effect on show traffic. Advertising and sales departments are asked to come up with a central show theme.

But the two big physical problems can't be solved by advance planning at the plant. These are:

- High-quality booth space. Competition for the highly prized center aisles is keen. And even though reservations are made a full year in advance, many firms find difficulty in getting precisely what they need. Seniority systems, especially, hamper companies that are new to the show.
- Suite reservations. Obtaining a suite in a choice hotel isn't a real problem. But many hotels will guarantee to provide only "a suite," not a specific suite. Moreover, many hotels insist that suites be occupied one or two days in advance of the meeting—a practice that can add several hundred dollars to the bill.

Right for the Show: Many chemical firms use great care in choosing personnel to staff booths and suites. Union Carbide Plastic's ad manager, Russ Matthews, for example, stresses the importance of choosing staffers that believe in shows as a medium of sales promotion. If it's a show where there's a lot of spot selling, top salesmen are needed. If inquiry cards are the main objective, he adds, sales trainees can often be used. U.S. Industrial Co. prefers sales staffers that "think of the company as a whole."

Phillips Petroleum's crews include district sales managers and administrative personnel from the home office. Reason: sales managers, responsible for the routes of many different salesmen, know more customers than individual salesmen. Other firms, such

IN
Hydrosulfites
Jacques Wolf Brings You
the whole
"KIT AND KABOODLE!"

If it's hydrosulfites—Jacques Wolf has everything! They're yours in whatever quantity you need—from test samples to truckloads! Specialists with over 40 years of experience in hydrosulfites offer you the most complete line of hydrosulfites anywhere! Get any or all from Jacques Wolf & Co.!

HYDROSULFITE OF SODA CONC. ($Na_2S_2O_4$) a high assay, non-dusting reducing agent for textiles, and for bleaching in the manufacture of soap, paper, dyestuffs, fats and oils, clay, sugar, straw, wiping rags, laundries and dry cleaning, sausage casings.

HYDROSULFITE AWC ($NaHSO_2 \cdot CH_2O \cdot 2H_2O$) highest strength of Sodium Formaldehyde Sulphoxylate for application and discharge printing, and stripping; high grade for pharmaceuticals.

HYDROZIN ($Zn(HSO_2 \cdot CH_2O)_2$) for stripping colors on wool, acetate, nylon. Clear-dissolving, soluble Zinc Formaldehyde Sulphoxylate. For discharge printing on acetate-dyed grounds.

HYDROSULFITE BZ ($Zn \cdot OH \cdot HSO_2 \cdot CH_2O$) Zinc Formaldehyde Sulphoxylate used for stripping wool stock, shoddy and rags.

INDIGOLITE—LEUCOTROPE W—LEUCOTROPE O for stripping and discharging of vat colors.

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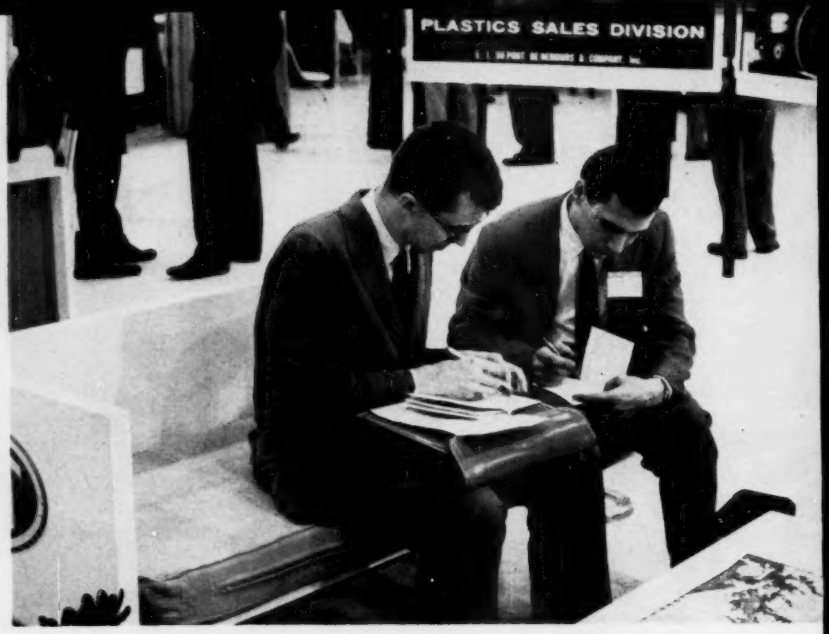
Chemicals PASSAIC, N.J.

Plants in: Clifton, N. J., Carlstadt, N. J., Los Angeles, Calif.



In exhibition booths, there's the chance to "talk technical."

as Celanese, Archer-Daniels-Midland and USI, lean to wide use of local sales personnel.

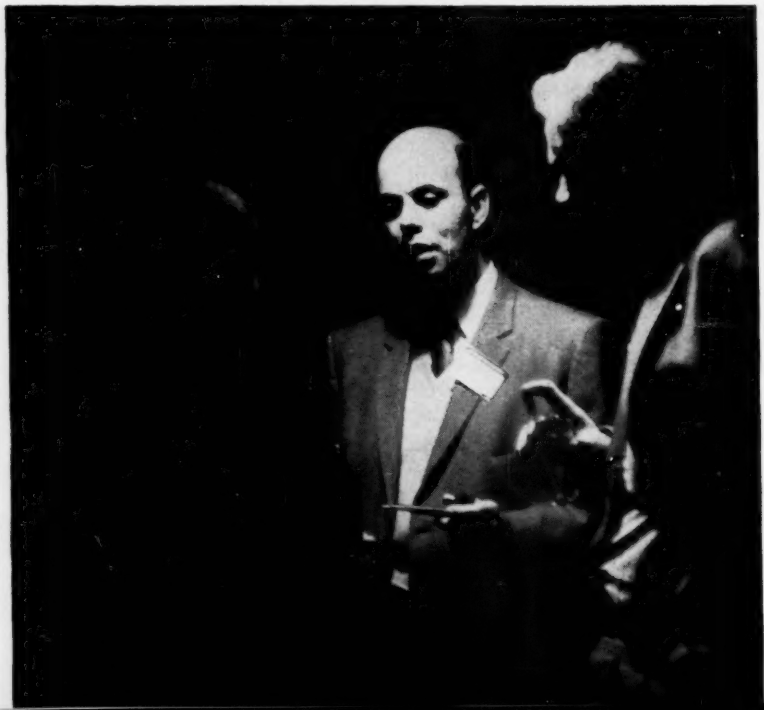
Most chemical companies provide for strong technical representation at shows. Diamond Alkali, for example, had two technical service and two research men in the 11-man crew handling its 25-ft.-long display.

Generally, only a few chemical producers believe in scheduling personnel for a full day at a booth when shows are open eight or more hours. But, since the plastics show was generally open only five hours, several companies scheduled salesmen for the full five-hour stint.

Suite Use: Opinion differs sharply on how selective salesmen at booths should be in extending invitations. Usually invitations are given only to established customers or serious prospects. For the plastics show, Diamond Alkali estimated it sent out 50 advance letters, extended about 200 personal invitations to floor contacts. *CW* found, however, a growing desire for more selectivity. That's because, as one spokesman for General Aniline put it, only 25-50 guests may visit a suite in the average evening.

Many companies split rooms in a suite into two areas: one for socializing, the other for private business

The spotlight's on personal contact at the hospitality suite.



discussions or product display. Occasionally, companies use suites for private screenings of product movies.

Most companies prefer to locate in the convention headquarters hotel or close by. That's to maximize suite traffic. But USI takes a different slant. Petrothene sales manager Vincent McCarthy prefers to locate some distance from the headquarters hotel. Better accommodations are usually available, he told *CW*, and the distance screens out conventioners who have little interest in the company.

Probing the Payoff: Exhibits and hospitality suites carry modest price tags. A large (100-sq.-ft. range) booth on a choice center aisle costs (including the display itself) in the range of $5,000-10,000. Hospitality suites for a five-day stand average between $1,000-3,000. Expenses for a 20-man crew might reach $3,000-5,000 excluding salary. Question: How much value stems from show participation?

USI's McCarthy believes it is next to impossible to measure precisely the value of suite hospitality—an opinion shared by most sales and ad executives. Sales executives do find these positive values for suites:

- They provide a quite place to renew old business contacts in a relaxed friendly atmosphere.
- They often produce many high-quality leads.
- Salesmen get opportunities to bypass purchasing agents, meet people they are often blocked from seeing on normal call schedules.
- Company prestige is boosted appreciably by a good reputation for hospitality.

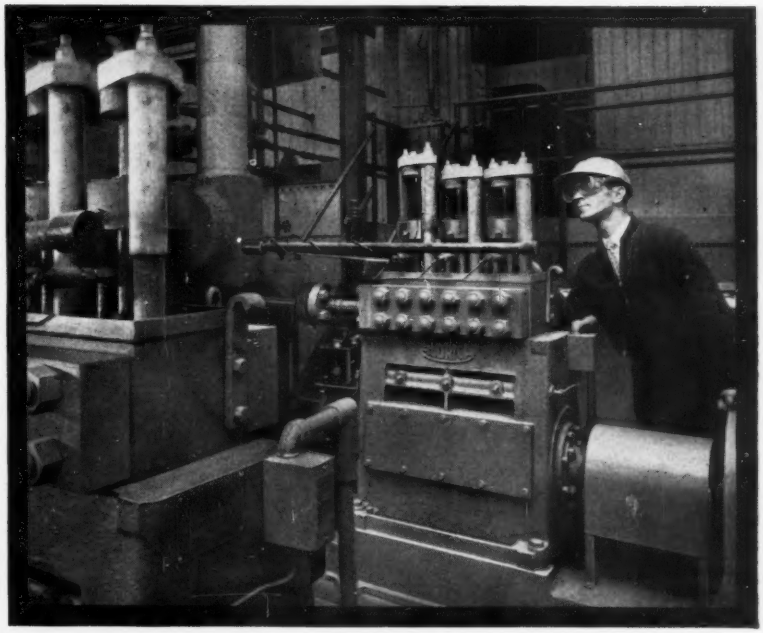
Most companies, however, try to find more specific payoffs, attempt some measure of such values. Salesmen are often required to file reports on all people contacted or entertained during a show. (Interestingly, entertainment does not run appreciably higher on a per-man basis during shows than during normal call days.) Celanese estimated cost per customer for two recent shows at about $6-$11. And companies can get a good idea of suite and booth effectiveness by the number of letters received from customers remarking "Sorry we didn't get a chance to visit."

Despite the intangibles and difficulty of measuring the payoff, salesmen regard conventions highly. As one sales manager tells *CW*, "Try going without a suite and see what happens."

SPENCER CHEMICAL CO. SOLVES PROBLEM:

Maintaining a controlled flow of liquid ammonia at high pressures, 24 hours a day...

At the Vicksburg, Miss. plant of Spencer Chemical Company, ammonia production demands two things of pumps: (1) 24-hour, 7-day-week operation and (2) continuous flow of controlled volumes of liquid ammonia at high pressure.



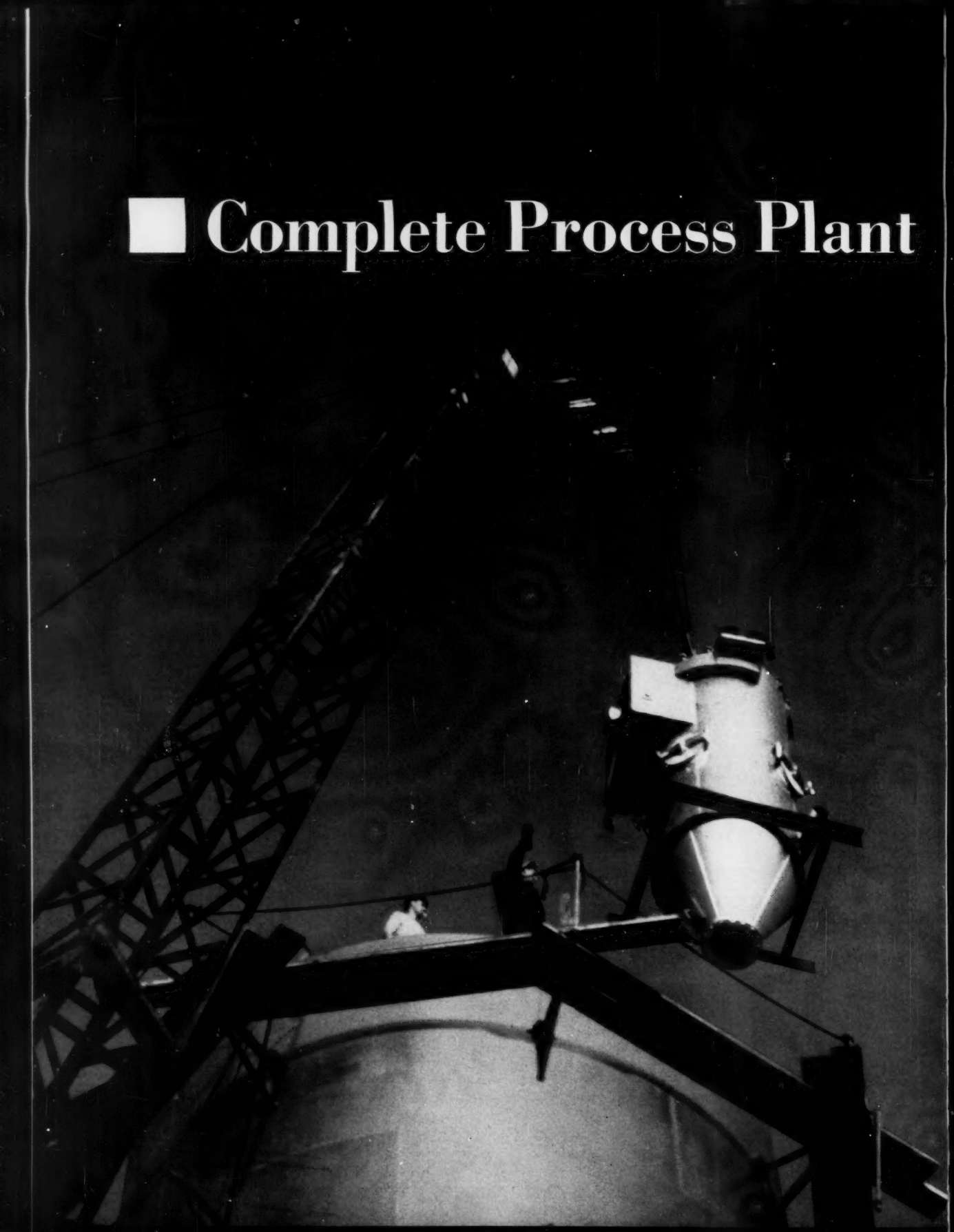
How Spencer licked the problem: When Spencer started construction plans in 1951, company engineers specified two Aldrich Direct Flow, ¾" x 3" stroke Triplex Pumps to be used for alternate 30-day periods. According to company spokesmen, nearly five years of service have proved these pumps to be efficient and capable of durable service.

Results: Dependability and freedom from trouble in all phases of operation. The Vicksburg Works Maintenance Superintendent tells us: "The Aldrich Pump is an excellent unit. Valve life is excellent and packing life exceptionally good."

We'll be glad to send you full information on Aldrich Pumps. Simply write Aldrich Pump Company, 3 Gordon Street, Allentown, Pa.

the toughest pumping problems go to ALDRICH

■ Complete Process Plant



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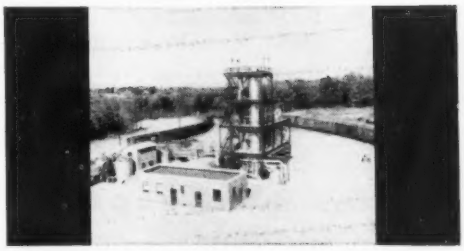
Construction...

The wide range of specialized skills needed for the construction of complete process plants is available to you at Vulcan-Cincinnati.

Our extensive background in constructing plants for the process industries enables us to interpret accurately your drawings and specifications and thoroughly understand the practical objectives of the design in terms of plant operation. Vulcan's construction specialists are equipped to handle every phase of your job from beginning to end . . . site preparation, foundations, structural steel, buildings, equipment erection, machinery setting, shop and field pipe fabrication and installation, electrical work, insulation and painting.

When your needs call for the construction of a pilot plant, a full-scale plant, or the reworking of an existing plant, rely on the experience and skill that has proved itself in countless successful process installations.



VULCAN-Cincinnati, Inc.

Engineers and Constructors • 120 Sycamore Street • Cincinnati 2, Ohio

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Shea spray-dried sodium phosphates dissolve two to three times faster than conventional types. These hollow, air-filled granules have a large surface area which permits them to go into solution quickly and easily, without prolonged agitation.

Clear, Haze-Free Solutions

This exclusive spray-drying process also assures you of clear, haze-free solutions. Spray-dried phosphates will neither bridge nor cake. Because they are relatively dust-free, you eliminate many processing problems. Their 70% greater bulk gives you a detergent package which is 20 to 30% larger—with no increase in price.

Sodium tripolyphosphate content is the highest in the industry—97 to 99%—thanks to our unique processing methods. Tetrasodium pyrophosphate content averages 99% or better.

Hooker can ship spray-dried Shea phosphates by rail or truck from Jeffersonville, Indiana, or Dallas, Texas. Write for free samples and prices, or call your local distributor.

HOOKER CHEMICAL CORPORATION

PHOSPHORUS DIVISION

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SHEA PHOSPHORUS AND DERIVATIVES

HOOKER CHEMICALS PLASTICS

Market Newsletter

CHEMICAL WEEK
November 29, 1958

Are ethyl alcohol prices going up again? Published speculation pegging a possible increase to take effect Jan. 1 has most marketers agog this week. "It's a ridiculous statement," one sales vice-president tells *CW*. Reason: ethanol tags were hiked substantially on fourth-quarter schedules (*CW Market Newsletter, Sept. 13*). Previous change occurred in '56, thus the recent increase followed the general two-year pattern of alcohol price movement.

But variation from market custom is not the only cause of sellers' reluctance to post a new advance. The market is in fairly good balance—no great excess of alcohol and no threat of shortage—and few producers would take the chance of upsetting the tea-tray with an unwarranted price hike.

Another major marketer summed up: "The alcohol business is pretty good right now; it held up well through the recession and it gives every indication of staying that way. Why jeopardize a good thing?"

•

It will be a couple of weeks before methanol users know for certain if a price increase is in the works. But chances are that schedules will be revised upward Jan. 1—perhaps 4-6¢/gal.

Methanol marketers unanimously declare that the current 26¢/gal. delivered tag is too close to a distress price, considering the present "brightened" market picture. The "panic factors" (including instances of pricing deals below official schedules) that brought on the sharp cuts earlier this year have nearly dissipated. Sales have picked up considerably, and the outlook is for a continuation of the brisk movement to customers.

The formaldehyde situation—still spotty in isolated areas— could bring about a postponement of the methanol advance until the second quarter, but chance of even that appears slim. The hefty formaldehyde drop in May (as much as 70¢/cwt. on most grades), preceded the methanol tumble, but now observers see the methanol pickup as having a "firming" effect on formaldehyde prices; much of the cost of formaldehyde is methanol.

Formaldehyde sales aren't booming, of course, but demand from major consuming industries (e.g., plastics, chemicals) is showing a heartening upturn, and business over the next few months seems in little danger of backtracking.

•

Trichlorethylene prices were reduced this week by Hooker Chemical; the new delivered prices in eight West Coast and Rocky Mountain states now reflect the same base price at Western manufacturing point as has prevailed f.o.b. Hooker's Niagara Falls plant. Representative delivered tank-car prices: Los Angeles, 13.6¢/lb.; San Francisco, 13.4¢/lb., Seattle, 12.1¢/lb.; Tacoma, 12.05¢/lb.

Some trade observers ascribe the trichlorethylene price cuts to the "very competitive situation" created by low-priced—and very plentiful—imports from Sweden, France, Belgium, Germany and Japan. Hooker, however, officially denies that import competition had anything to do with the firm's decision to reduce tabs.

Most of the flood of import material hits eastern U.S., but a significant amount goes to supply West Coast markets. Trade observers are guessing that other sellers of domestic material will follow Hooker's lead in reducing prices. But whether competition from imported material will also be a major factor in pressuring prices downward is moot.

•

The busy season for chemical forecasters has started, judging from the spate of '59 predictions emanating this week from diverse corners of the CPI. Some highlights:

• U.S. polyethylene exports will decline to about 200 million lbs. in '59 (from an estimated 225 million lbs. in '58) but will pick up and hit new highs in '60 or '61, according to Kenneth Cosslett, of U.S. Industrial Chemical.

• World plastic production will triple—to 27 billion lbs./year—by '68, says U.S. Rubber's H. E. Humphreys, Jr.

• U.S. consumption of new rubber in '59 will climb to 1.5 million long tons—up 19% from the '58 figure—reports Rubber Manufacturers Assn. Planned expansions will boost natural and synthetic rubber capacity from 3.4 million tons in '57 to a likely 4.36 million tons by '62.

•

Australia's first styrene monomer plant will be a joint venture of Monsanto Chemicals (Australia) Ltd.—which is controlled by U.S. and U.K. Monsanto companies—and Petroleum and Chemical Corp. Ltd., Australia's first petrochemicals manufacturer.

The $4.5-million plant, in Sydney, is time-tabled for operation in late '60; styrene monomer imports by Australia are expected to grow steadily until then.

SELECTED PRICE CHANGES—WEEK ENDING NOVEMBER 24, 1958

	Change	New Price
UP		
Caprylic acid, dms.	$0.02	$0.3150
Lauric acid, 90%, dms.	0.02	0.34
Tallow, inedible, fancy, bleachable, tanks, dlvd.	0.00125	0.0875
Tin metal (Straits)	0.0050	0.99375
DOWN		
Lead nitrate, bbls.	0.0250	0.2425
Mercury metal, 76 lbs./flask, net flask	1.00	228.00

All prices per pound unless quantity stated.

from batch to bottle...

INTEGRITY
is the hidden
ingredient in
Trona® SODA ASH

There's an important ingredient in Trona SODA ASH that's hidden to the eye, does not show up in laboratory analyses or photomicrographs. Yet, from batch to bottle, this ingredient—the *integrity* of Trona Soda Ash—is vital to the glassmaker's art. Trona integrity works for you three ways. Our constant striving for superior quality contributes to the continued improvement of your own end-products. Our Sales and Production departments work as a team to make delivery *when* you want it and *how* you want it. Our glass technology section provides you with specialized technical service on a confidential basis to help you cut costs and improve your process to meet today's changing market. You'll benefit through the integrity inherent in Trona Soda Ash and Trona service. We'll be glad to show you how.

TRONA **American Potash & Chemical Corporation**

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POWELL

world's largest family of valves

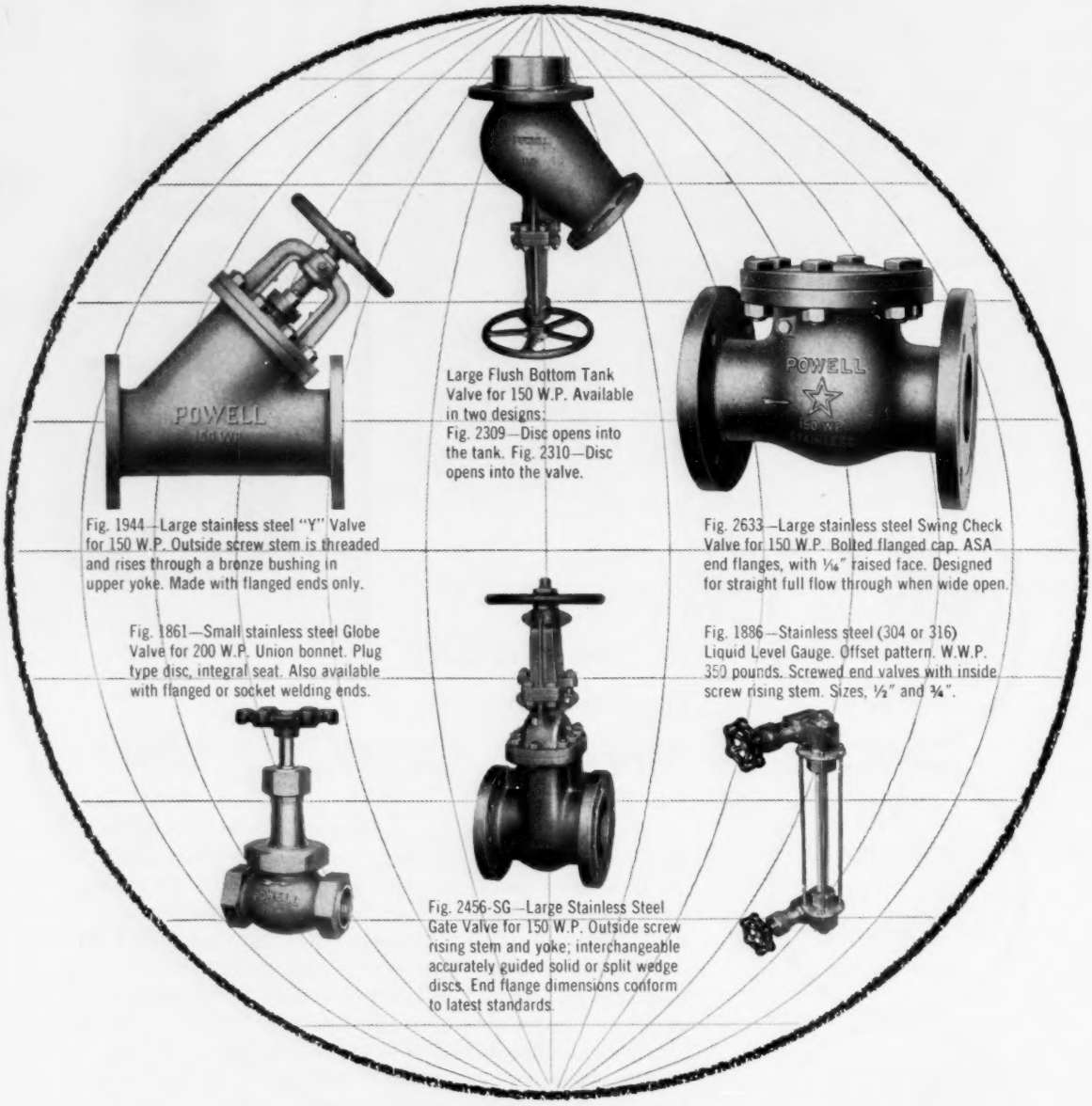

Fig. 1944—Large stainless steel "Y" Valve for 150 W.P. Outside screw stem is threaded and rises through a bronze bushing in upper yoke. Made with flanged ends only.

Large Flush Bottom Tank Valve for 150 W.P. Available in two designs: Fig. 2309—Disc opens into the tank. Fig. 2310—Disc opens into the valve.

Fig. 2633—Large stainless steel Swing Check Valve for 150 W.P. Bolted flanged cap. ASA end flanges, with 1/16" raised face. Designed for straight full flow through when wide open.

Fig. 1861—Small stainless steel Globe Valve for 200 W.P. Union bonnet. Plug type disc, integral seat. Also available with flanged or socket welding ends.

Fig. 1886—Stainless steel (304 or 316) Liquid Level Gauge. Offset pattern. W.W.P. 350 pounds. Screwed end valves with inside screw rising stem. Sizes, ½" and ¾".

Fig. 2456-SG—Large Stainless Steel Gate Valve for 150 W.P. Outside screw rising stem and yoke; interchangeable accurately guided solid or split wedge discs. End flange dimensions conform to latest standards.

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Subzero weather turns vapor trails from process equipment into steamy blanket that covers plant.

Seasoned Planning Blunts Winter Problems

There's a marked difference apparent this week in the way some Western chemical plants are recovering from the winter's first blizzards. The hard-won design ideas for "winterproofing" that characterize some plants has permitted them to shrug off winter's clutch; for others, poorly designed for cold climates, wintertime means extra downtime and maintenance overtime.

Where can you get tips on designing to foil winter's worst? A prime source is a unit such as Canadian Chemical Co. Ltd.'s plant at Edmonton, Alta., which is already two weeks into the winter season — a winter season, incidentally, that lasts six months and features temperatures below —40 F for more than a week at a time.

Admittedly, the climate presents numerous problems. But these can be minimized with proper cold-weather design factors — and these factors don't have to add appreciably to construction and operating costs, says Vincent T. Anwyll, vice-president of the company.

Contractor Choice: First consideration is selection of the contractor. The construction firm should be one that has had experience in the plant-site area, or an area with a similar climate. A smart builder, for example, knows that while the inclination is to schedule concrete pourings for warm weather, it may be cheaper to pour in cold weather than to defer construction several months.

Canadian Chemical decided to pour in cold weather; for periods of two to four days, it burned layers of crushed coal spread over straw to thaw ground for excavations.

Now, for repairs, work is still done in coldest weather. In hazardous areas, slower and more costly ground thawing is accomplished by laying steam coils. To keep the soil warm and supply the three-day 60-70 F needed to

Pressure-spraying of hot tar protects concrete from moisture damage.

cure concrete, oil-fired space heaters enclosed in portable canvas-covered wood frames are used.

Below the Frost Line: Foundations, pipe supports, etc., are placed deeper than usual, below the frost line, to prevent frost heaving. Curtain walls between exterior building column pedestals help prevent frost heaving, cracking of walls and floors; and they keep the frost from penetrating buildings, freezing shallow underground pipelines and sewers. Hot tar is pressure-sprayed onto below-grade building foundations and curtain walls to prevent moisture from freezing in the concrete, that would cause spalling.

Once construction has reached above-ground level, wood or tubular steel frames covered with polyethylene film or tarpaulins can be used to encase working areas.

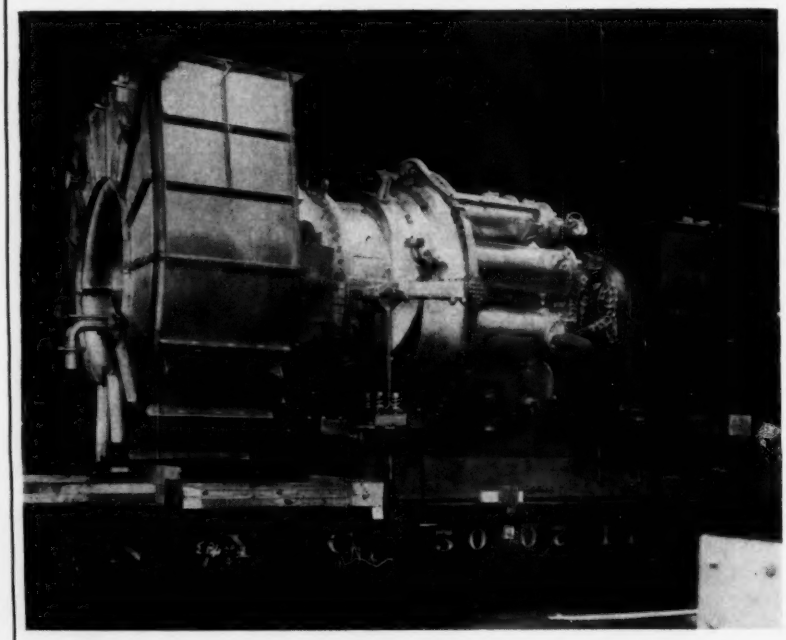
The Little Things: The most economical buildings, according to Canadian Chemical, have asbestos-board or wood exteriors with a thick layer of sprayed asbestos or other insulation. Outside walls of concrete or stone require large internal air spaces for insulation—which ups costs.

Windows must be double-glazed to reduce heat loss and prevent fogging. Ordinary walk-in doors should be metal-clad wood or hollow metal.

Condensation on roll-up doors can be particularly troublesome, according to Canadian Chemical, and metal-trimmed wooden doors have proved best in minimizing it.

In addition to conventional roof construction, insulation such as foamglass blocks must be provided. Canadian Chemical had to add a false ceiling in its tank-car-cleaning shed to eliminate excessive condensation and freezing.

But thoughtful planning can eliminate unnecessary work. For ex-



Repaired Gas Turbine Ready to Roll

Dwarfing the worker beside it on the railroad flatcar (*above*), this 13,000-hp. gas turbine is ready for its trip from Schenectady, N.Y., back to Esso's Baton Rouge, La., refinery. One of the two damaged in the refinery's ethylene plant fire early last month, it was repaired in just 37 days by General Electric's Gas Turbine Department. The quick repair is one of the factors that should aid Esso in supplying ethylene customers (*CW Technology Newsletter, Nov. 22, p. 62*).

Major factor in the rapid repairs: neither turbine sustained rotational damage; original clearances were intact. Main fire damage was to turbine inlets and exhaust hoods.

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ample, only the bottom of distillation towers were housed in. This provides protection for critical instrumentation, valves, etc., keeps operators indoors a maximum amount of the time.

And many items of equipment must be protected from snow and ice. For example, transfer pumps in the tank farm are housed in sheds. And relief valves on distillation-tower vapor lines are put inside buildings.

Cooling-tower fans were designed so they could be run in reverse at low speed for short periods of time (about one hour) to remove ice on the air intake louvres and tower packing. Also, heating and ventilating equipment was specially designed. For example, fresh-air inlets are larger, inlet-air velocities lower than usual to prevent snow and moisture being carried into ductwork and onto filters. And steam-heating coils had to be heavy-duty, nonfreeze type. Fresh-air ductwork had to be insulated to prevent moisture condensation on cold surfaces. Outdoor steam traps were of the impulse type to prevent condensation accumulation.

Equipment Design: Extra consideration must be given to pumping fluids in extended cold-weather periods. Pumps, drivers and pipelines are often oversized to work well as the fluids thicken in the cold. "Instead of tracing lines to improve fluid pumpability, it may be less expensive to install a larger pump and a 3-in. line instead of a 2-in. line," says Anwyll.

Bayonet heaters were installed in outdoor storage tanks. Most piping has thermal insulation, some carries steam or electrical tracing. When lines freeze, the most practical solution is often electrical resistance thawing (live steam thawing is often difficult because insulation must be removed), according to Canadian Chemical. Portable electric welders, which use the resistance of the pipe to generate the necessary heat, can be used on some lines up to 6-in. diameter, are most efficient on lines up to 2-in. diameter. "As for large lines, you just don't let them freeze," says Anwyll.

Canadian Chemical has made extensive use of heating cable—resistance wire insulated with varnished cambric and asbestos and encased in a flexible lead sheath. The cable is wrapped spirally around nonflowing lines, is especially useful in de-icing vent lines where condensation and freezing are likely. The cables are also embedded directly in concrete slabs of door- and walkways.

The employee parking lot is provided with 110-volt outlets for engine heaters for all automobiles.

Everybody's Problem Plus: Some problems are shared with warmer locations. But they are often more acute in the colder climes. For example, instrument and service air must be dried to a dew point of —60 F instead of the usual —15 to —20 F to prevent line freezing.

Gas hydrates are a common problem in most high-pressure natural gas transmission lines, are overcome by dehydration with glycol, alumina or silica-gel or methanol injection. Canadian Chemical also uses methanol injection in LPG transmission lines from local oil refineries.

Discharge of plant effluent is also complicated in winter when the North Saskatchewan River is covered with ice, and flow drops to 1/40th of maximum summer flow. Much of the effluent, particularly the high-odor material, must be impounded, released under control during the summer months.

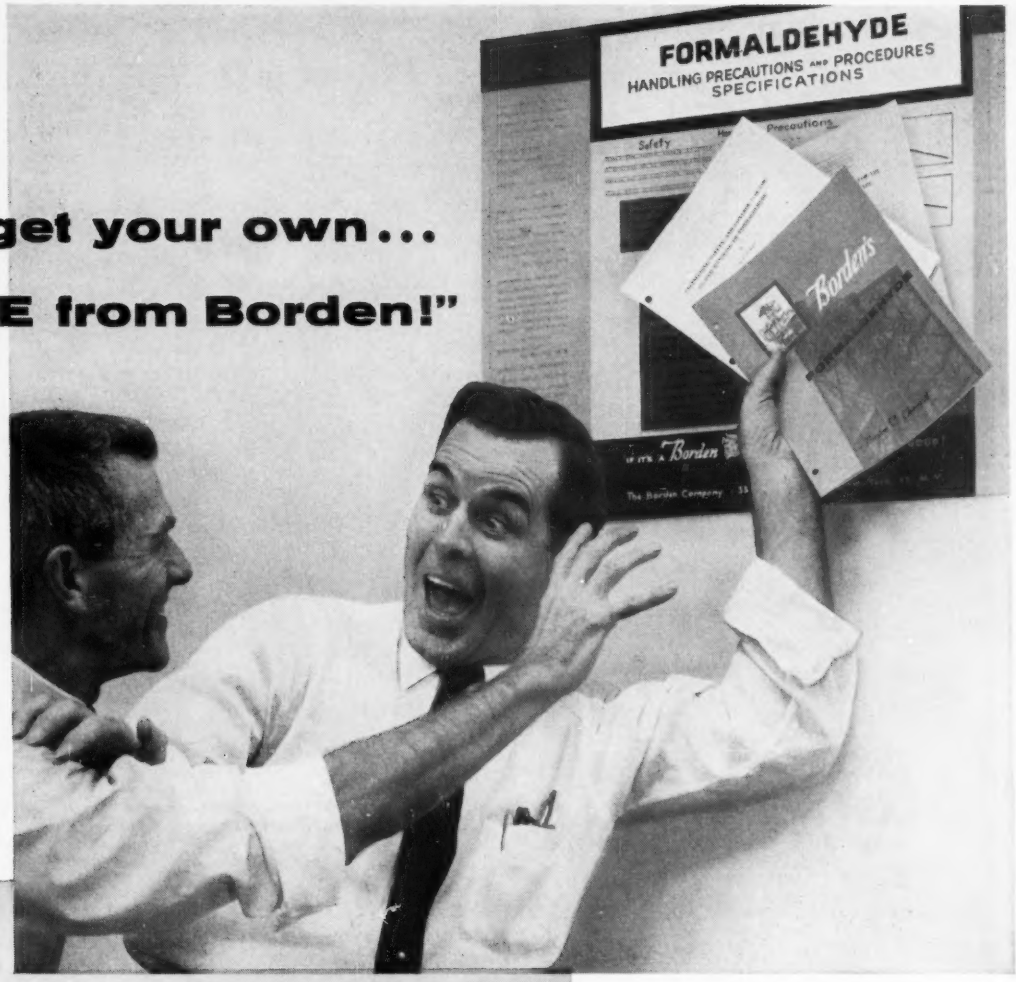
Such operating considerations, like the design ideas, are a little troublesome to keep in mind at first. But when they are kept in mind, cold weather operation becomes routine, and production needn't drop with the temperature.

EQUIPMENT

Compressor: Atlas Copco (New York) has added a new intermediate-size air compressor to its line of stationary compressors that range in capacity from 45 to 19,400 cfm. The new AR-4 compressor delivers up to 835 cfm. of air at 100 psi, can also be used as a skid-mounted unit.

•

Grounds Maintenance Handbook: A new reference handbook about grounds maintenance is being offered by F. W. Dodge Corp. (119 W. 40th St., New York 18). Authored by Herbert S. Conover, landscape architect for the St. Lawrence power project, the book was first put out by the TVA as a suggested operating manual for its personnel. Subjects include: care of turf, trees and shrubs; preferred methods of road and parking-area construction and repair; equipment use and maintenance.



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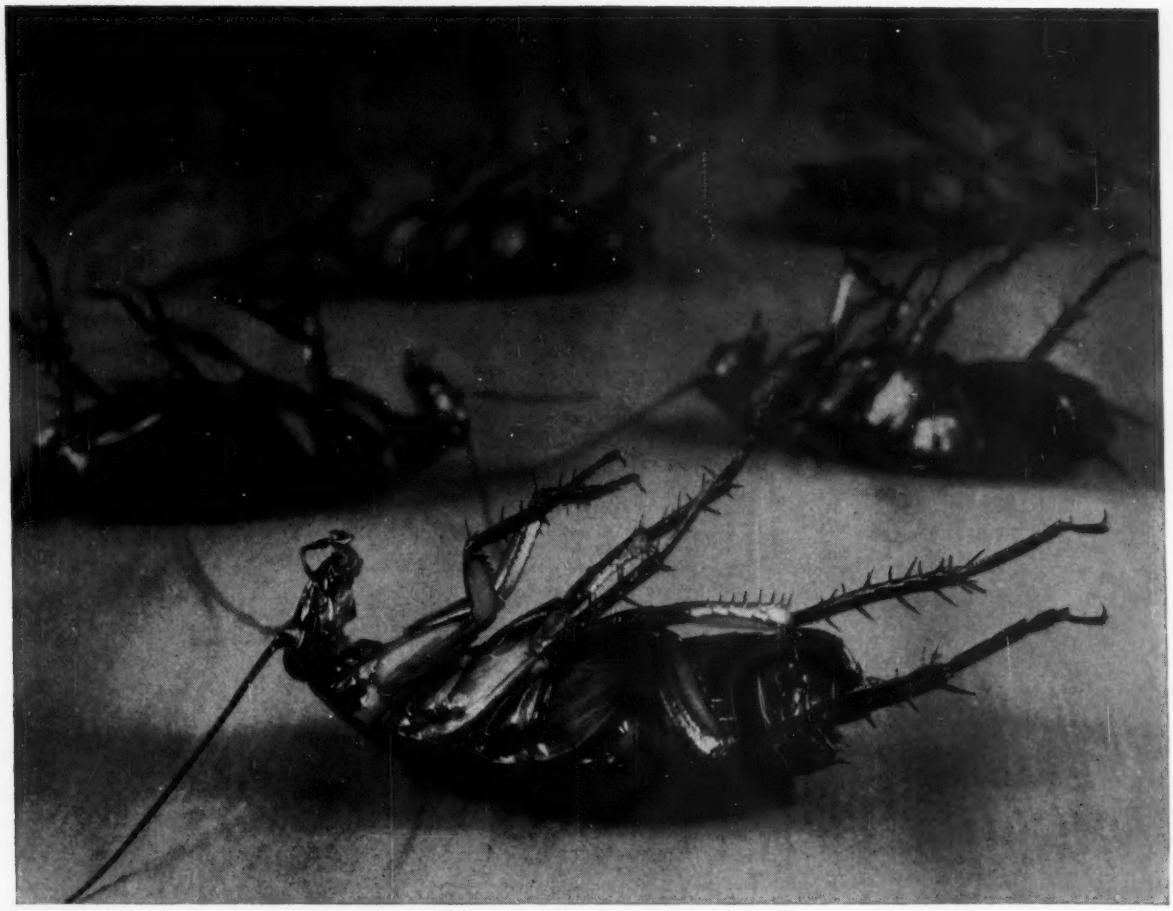

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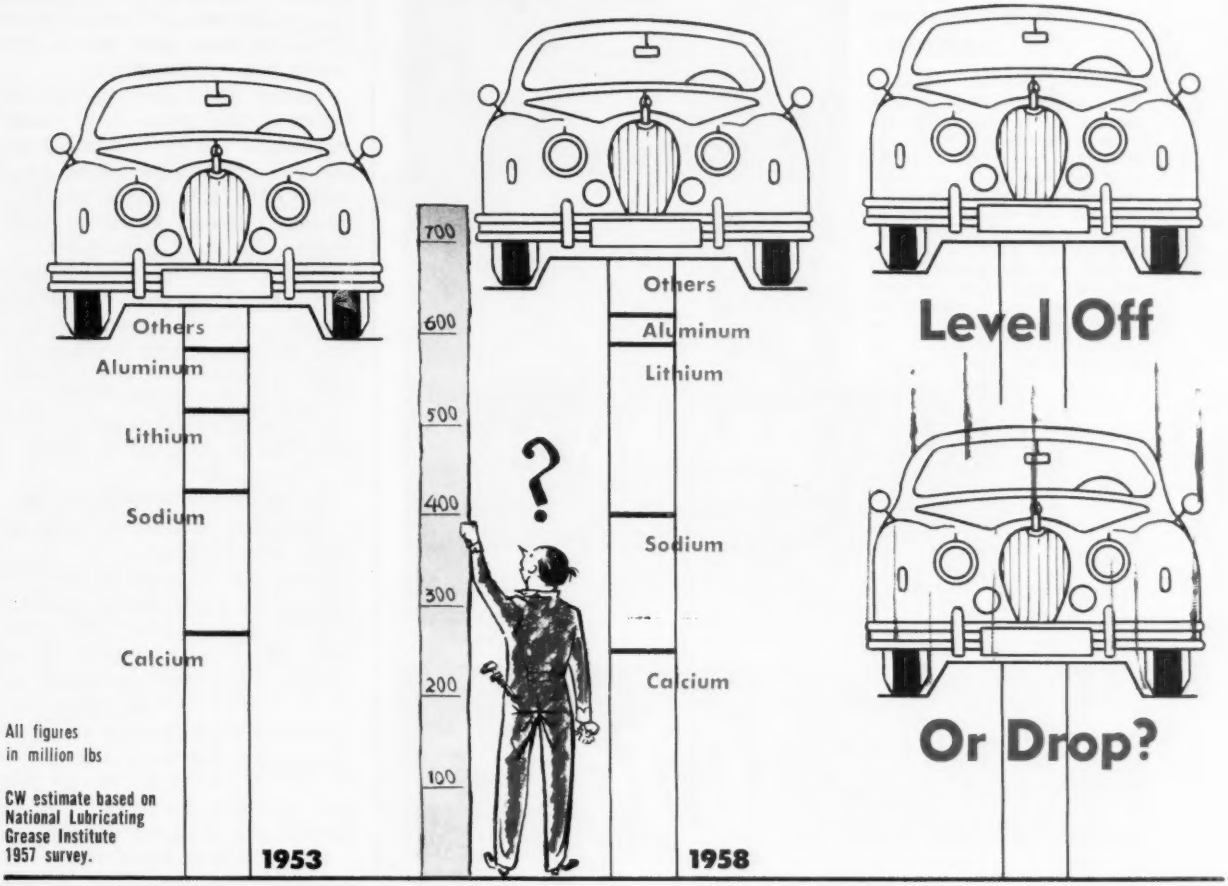
U.S. Lubricating Grease Demand: Will It . . .



Future of Grease Rides with Auto Needs

This week, trade followers are busily re-evaluating the future of the lubricating grease industry. Reason: a recent National Lubricating Grease Institute survey forecasts a jolting drop, within 10 years, in automotive grease demand—keystone of the total lube grease market.

Considering that previous grease surveys presented healthy growth trends, it's understandable why the industry is in a turmoil over the report, presented by Esso Standard Oil Co.'s E. M. Drout. Drout says automotive grease consumption may go as low as 107.2 million lbs. by 1965, some 46% under the high of 197.3 million lbs. consumed in '56. Passenger car grease demand alone may drop 67% during this period, to 40 million lbs. It was an estimated 120 million lbs. in '56.

Buttressing his report is the dramatic change in the number of grease fittings in passenger cars. Drout points out that new cars today average about 11 grease fittings, compared with 25 in the '50 models. Recent advances in the field of permanently lubricated or essentially friction-free bearings spell out a continued downward trend in the number of grease fittings per car. Auto manufacturers now take the stand that complete elimination of fittings is only a matter of time. Drout says it may take 10 years. But it still points to a slump in automotive grease consumption.

Another factor limiting an increase in demand for auto grease is better grease "mileage." Although manufacturers recommend chassis greasing every 1,000 miles, the average motorist today has his car greased every 2,200 miles. Drout forecasts that by '65, car greasing will probably be done every 2,700 miles. Increased auto registration, he says, can't halt this downward trend in grease use.

Disagreement Common: The lubricating industry is, of course, in sharp disagreement over Drout's report. Some declare that: (1) auto grease demand won't do worse than level off; (2) total grease demand will increase because of stepped-up industrial use.

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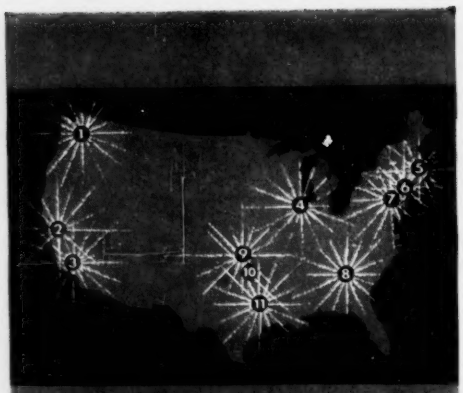

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MARKETS

Drout's report that the demand trend is definitely downward but feel that a slump might be averted by a strong promotional campaign to re-educate motorists on the need for frequent chassis lubrication. Still others, though backers of Drout, state that his forecasting was too pessimistic.

Another NLGI report on auto and industrial lube grease is of double importance: it is the first official survey that separates lubricating grease output from fluid gear lubricants; it presents a detailed breakdown of the various lubricating grease types.

Prior to this report, the industry used a broad terminology in defining "grease," lumped statistics for both lube grease and gear lubricants together. Clarity was largely gained by defining grease in the survey as ". . . a solid to semifluid product of dispersion of a thickening agent in a liquid lubricant."

In past surveys, distortion and confusion existed as to trends within the grease industry. Example: two reports on passenger car grease consumption disagreed by a wide margin on actual demand figures. One report—presented in '56 at an NLGI meeting—pegged that year's passenger car grease needs at 350 million lbs. Drout's report on passenger car grease consumption tags some 120 million lbs. for this outlet in '56. It's now generally agreed that the earlier survey included gear lubricant estimates.

Based on latest NLGI reports, industry estimates that 680 to 685 million lbs. of grease will be made this year. This is approximately the output that was estimated for '57, and is some 50 million lbs. more than was made in '53. (Fluid gear lubricant output: some 555 million lbs. in '58; 515 million lbs. in '53.)

How have the major chemical components fared in the total grease market? Here's the rundown.

Calcium Tops, But Skidding: Calcium grease is still the workhorse of the industry. This year, some 37%—250 million lbs.—of total grease output will be of the calcium type.

Of course, there's no denying, however, that this grease is rapidly losing ground to lithium grease. Partly causing this decline is the fact that calcium grease is insoluble in water, and use is limited to a relatively small temperature range.

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MARKETS

oncomer in the grease industry, and now taking second place in the line-up, is lithium grease. Output this year will hit a high of 190 million lbs., 28% of the market. In '53, lithium grease output was some 100 million lbs. less than '58's; at 90 million lbs., it was only 14% of the total market. These materials can be used over a wide temperature range.

Sodium grease has also been hit by the encroachment of multipurpose lithium grease, will compose only 22% of total grease output this year. It went into 25% of the market in '53, or 150 million lbs. vs. 158 million lbs., respectively.

Aluminum soap grease output today is about 4.5% of the total market, roughly 31 million lbs. Compared with '53's output of 69 million lbs., this is a 55% plunge. Reason for the drop: encroachment by all three of the previously named greases.

Specialty Greases Spiral: Production of other greases, bulk of which represents the specialty types — silicone, barium, moly sulfide — has shown a healthy growth, will hit some 60 million lbs. this year, compared with 49 million lbs. in '53. This reflects the growing usage of specialty grease in fine instruments, turbojets, special electronic equipment.

The Future? On the assumption that Drout's forecast is correct, how big an effect will backsliding grease requirements — a reversal of past growth—have on chemical sales?

"Very little," states one major alkali maker. "Every dollar of sales helps, but considering that the grease industry is a small market for the basic calcium and sodium compounds compared with the more important outlets, any falloff would be a drop in the bucket in our sales picture."

A spokesman for the lithium industry tells *CW*, "Despite the controversy over the trend in grease consumption, we expect our sales to the lubricating industry to move upward. It may not go as high as previous estimates, but it definitely will grow. Lithium grease is increasing its share of the automotive market, and is finding increased use in industrial applications."

"Oil and grease manufacturers, not chemical suppliers, will suffer if the backsliding trend forecast proves accurate." That sums up the prevailing CPI view on this hot and heavy controversy.

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VIEWPOINT

IS LUNG CANCER caused by air pollution? Yes, if you believe the scare headlines that blossomed on the pages of many newspapers last week, on the occasion of the U.S. Public Health Service's first conference on air pollution. The newspapers had a field day in speculating on a single, moderate paragraph from a speech by Surgeon General Leroy E. Burney. Here, for the record, is his entire comment on cancer:

> The relationship of cancer to atmospheric pollution, for example, is being explored. We know that cancer-producing agents are in the air we breathe. Cancers can be produced in animals using concentrates of urban smog. We know that lung cancer death rates in the largest cities are twice as high as those in nonurban areas. The case has not yet been proved, but the weight of circumstantial evidence grows heavier as research progresses.

Few people with a reasonable knowledge of the current state of cancer research would quibble with this, except, perhaps, to point out that many other irritants—physical and chemical—have a similar effect.

But the news stories have left the general public with the impression that the link between air pollution and human lung cancer has been proved.

We can be glad that the chemical industry was not made a whipping boy this time. But even the fact that we spend at least $250 million/-year on control* may not be enough. For though the conference adopted a recommendation against hasty regulatory action, this may easily be forgotten. (As one observer put it: "Now that they've scared everybody, they're telling 'em to keep calm.")

These principles cannot be overstressed by chemical firms:

- Reasonable use of the atmosphere for dispersal of smoke and other wastes must continue.
- Where this affects the general public, it should be controlled.
- Control efforts must remain practically and economically feasible.

* By the way, if you're interested in further details on the process industries' air pollution control techniques, write me for a 39-page summary report.

Editor-in-Chief

OPINION

Chemical Week in Texas

TO THE EDITOR: I thought the attached memorandum might be of some interest to you.

RICHARD MOREHEAD
McGraw-Hill News
Austin, Tex.

PRESS MEMORANDUM
FROM THE OFFICE OF
GOVERNOR PRICE DANIEL

One of the fastest-growing industries in Texas, the chemical industry, is playing a vital role in the development of our state and its resources.

Chemistry will continue to produce new goods and materials from the abundance of natural resources afforded by Texas and the Southwest.

Hundreds of leading scientists and engineers from a five-state area will gather in San Antonio, Dec. 4-6, for the 14th Southwest regional meeting of the American Chemical Society.

Therefore, I, as governor of Texas, do hereby designate the week of Dec. 1-6, 1958, as

CHEMICAL WEEK

in Texas.

This week, 1,799 CHEMICAL WEEK*'s in Texas.*—ED.

Sulfite Pulp Incentives

TO THE EDITOR: Your interesting article "New Incentive for Pulping Switch" (*CW, Oct. 11, p. 79*) gives the impression that there are only two existing methods of sulfite pulping—calcium and magnesium—and discusses a variation of the latter. It should be noted that other bases have been used, particularly ammonia and soda, which offer recovery possibilities.

In the next expansion of the paper industry, which is bound to come despite the present situation, pulping processes utilizing abundant and cheap soda ash as a base may well be used. A recovery procedure like the Sulfox process, similar to the one used in kraft pulping, could follow the soda pulping, recover the chemicals, and reduce pollution problems.

ROBERT S. ARIES
Aries Associates, Inc.
Stamford, Conn.

Much has been written on various sulfite pulping processes. CW's *story concerned the new Magnefite pulping method, and compared it with calcium pulping, the most widely used sulfite method, and with conventional magnesium pulping, as the sulfite method most relatable to the Magnefite process*—ED.

Fire Protection Interest

TO THE EDITOR: The article "Blazing New Trails in Fire Technology" (*CW, Nov. 1, p. 57*) is an interesting development, as it is indicative of some of the investigation into fire protection being done outside of the insurance companies. It is, of course, a very small beginning, but I believe there is a very definite place for investigation of this kind. Of course, an appreciable amount of such investigation has already been done in the laboratories of the larger chemical companies; in particular, I would mention that of Union Carbide Chemicals Co. in South Charleston, W. Va.

I am also interested to see the activity of U.S. Fire Protection Engineering Service in this connection, as there is obviously room for a considerable amount of engineering consultation in respect to fire protection independent of the insurance organizations.

ALLEN L. COBB
Director of Industrial Safety
Kodak Park Works
Rochester, N. Y.

MEETINGS

Material Handling Institute, annual meeting, Roosevelt Hotel, New York, Dec. 7-9.

American Institute of Chemical Engineers, annual meeting, Netherland Plaza Hotel, Cincinnati, Ohio, Dec. 7-10.

Symposium on High Speed Testing, Sheraton-Plaza Hotel, Boston, Mass., Dec. 8.

American Nuclear Society, winter meeting, Sheraton-Cadillac Hotel, Detroit, Mich., Dec. 8-10.

Chemical Specialties Manufacturers Assn., annual meeting, Commodore Hotel, New York, Dec. 9-11.

American Society of Agricultural Engineers, winter meeting, Edgewater Beach Hotel, Chicago, Ill., Dec. 15-17.

American Assn. for the Advancement of Science, annual meeting Sheraton-Park Hotel, Washington, D.C., Dec. 26-31.

CB&I TANKS

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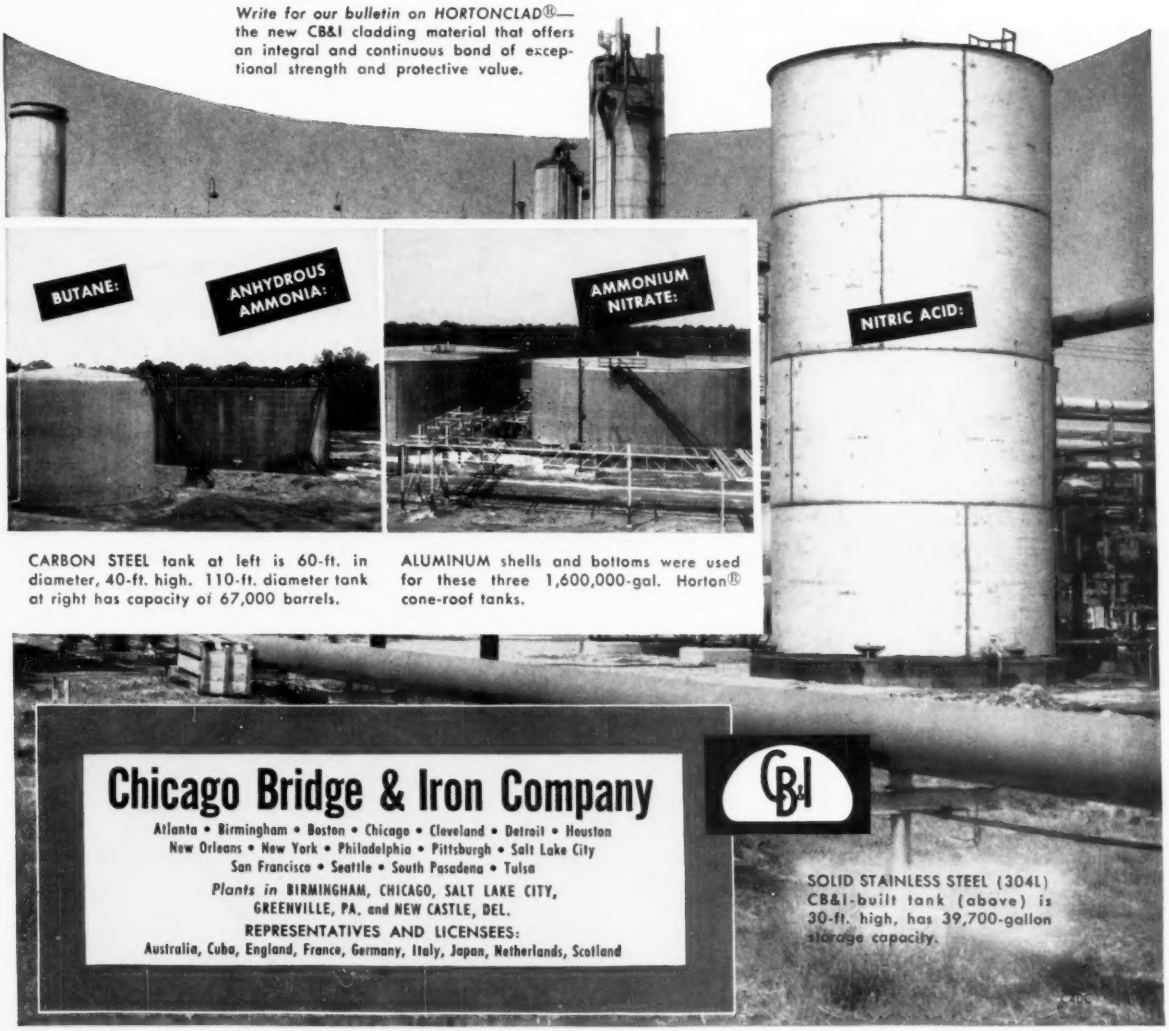
Write for our bulletin on HORTONCLAD®—the new CB&I cladding material that offers an integral and continuous bond of exceptional strength and protective value.



CARBON STEEL tank at left is 60-ft. in diameter, 40-ft. high. 110-ft. diameter tank at right has capacity of 67,000 barrels.

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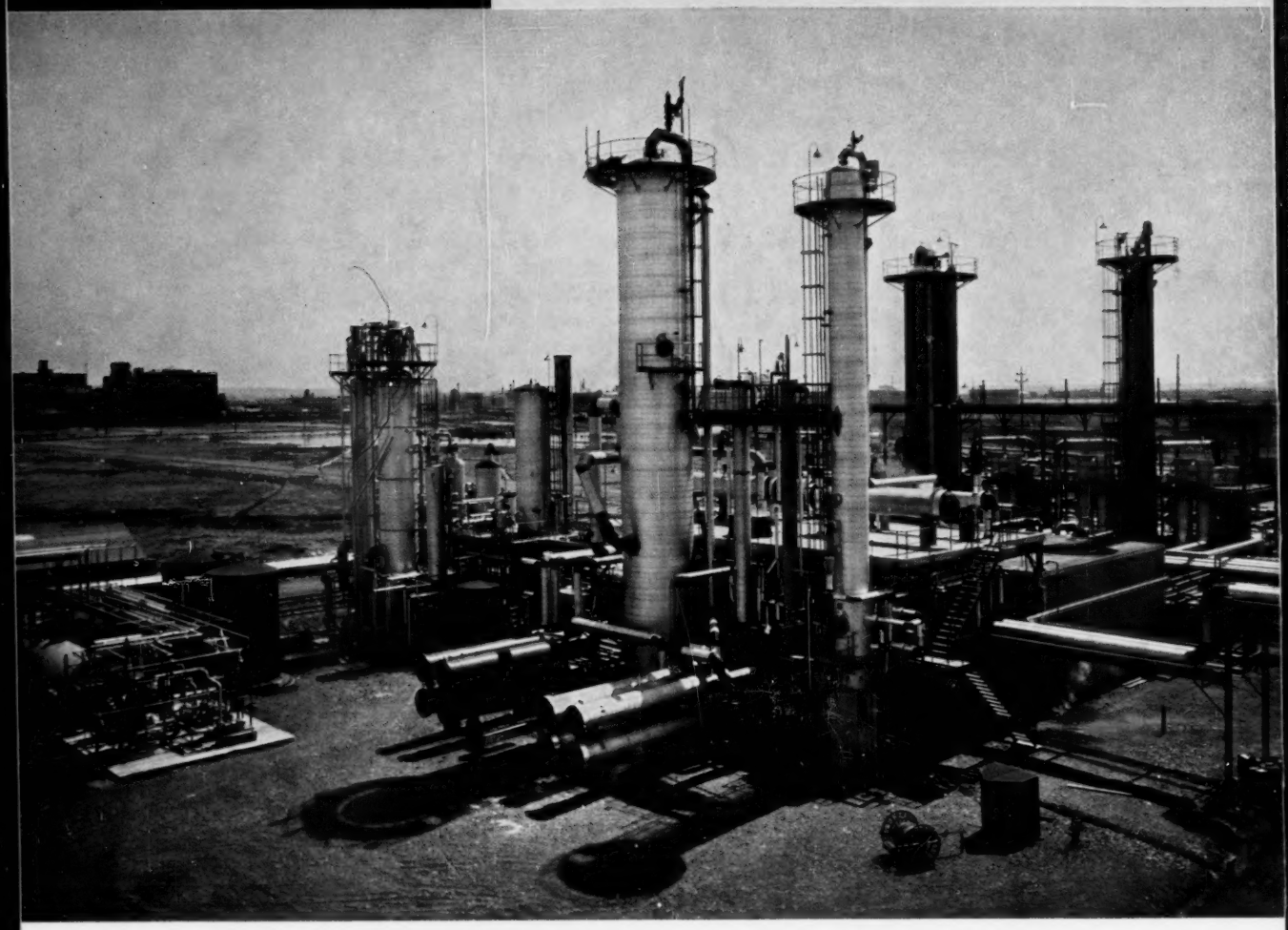
ON STREAM

G.A.F.'s New Ethylene Oxide-Glycol Plant



New ethylene oxide-glycol plant of General Aniline and Film Corporation located in Linden, N. J., easily seen from the New Jersey Turnpike.

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